



**Headquarters**  
Washington, DC 20546-0001

Office of Communications

August 1, 2019

Taylor S. Amarel  
MuckRock News  
DEPT MR 70660  
411A Highland Avenue  
Somerville, MA 02144-2516  
[70660-88947088@requests.muckrock.com](mailto:70660-88947088@requests.muckrock.com)

FOIA: 19-HQ-F-00473

Dear Mr. Amarel:

This is in response to your Freedom of Information Act (FOIA) request dated April 15, 2019, and received at the National Aeronautics and Space Administration (NASA) Headquarters FOIA Office April 17, 2019. Your request was assigned FOIA Case Number 19-HQ-F-00473 and was for:

I would like to obtain all emails sent to, from, or copies to James Frederick Bridenstine from January 1, 2019, to Present day, containing any of the following non-case-sensitive key strings: 'SLR' or 'SpaceX.'

In your FOIA request, you did not identify any fees you'd be willing to pay. On May 31, 2019, NASA sent you a clarification letter asking you to clarify your request and also informed you that you have been categorized as "all other" FOIA requester. NASA informed you that in this category, you are entitled to two hours of search time and 100 pages free of charge. Additionally, the letter sought more information concerning the records you seek in order to optimize the 100 pages of records you would be entitled under your request. You responded to our clarification letter of May 31, 2019, with the following response:

"If adequate clarification to reduce the scope of the applicable records, could you please limit the scope of the requested documents to only documents that were sent to or from James Frederick Bridenstine. You may ignore emails that were copied to James Frederick Bridenstine."

In response to your request, a search was conducted by the NASA's Office of the Chief Information Officer (OCIO) to search for emails that were sent to and/or were from Mr. Bridenstine relating to SLR or SpaceX. The Office of the Chief Information Officer located approximately 30,000 pages of emails that included search terms "SLR" or "SpaceX." Please note, however, that many of these emails are only responsive because they contain some iteration of those search terms. For example, many of the emails we reviewed simply included articles with passing references to SpaceX, and some had nothing to do with SpaceX at all despite the presence of the search terms somewhere in the message.

Because you did not agree to pay any fees, NASA is providing you with 100 pages of the above-referenced emails to which you are entitled free of charge per NASA's FOIA regulations. 14 C.F.R. § 1206.507(b). We only included within these 100 pages, emails with the above-referenced search terms which we believe are most responsive to your request. Portions of the responsive records are withheld pursuant to FOIA Exemptions 5 U.S.C. § 552 (b)(2), (b)(5), (b)(6), and (b)(7)(E).

FOIA Exemption 5 U.S.C. §552 (b)(2) of the FOIA protects from mandatory disclosure documents "related solely to the internal personnel rules and practices of an agency." *See* 5 U.S.C. § 552(b)(2). NASA is invoking Exemption 2 to protect employees' mobile phone numbers and lists of internal emails created for NASA's Office of Communications.

Exemption 5 protects "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency." 5 U.S.C. § 552(b)(5). Courts interpret Exemption 5 to incorporate three primary privileges: the attorney work-product privilege, the attorney-client privilege and the deliberative process privilege. NASA invokes the deliberative process privilege to one email. The deliberative process privilege is intended to protect the decision-making process of government agencies and to encourage frank discussion of legal and policy issues. The scope of the privilege covers documents reflecting advisory opinions, recommendations, and deliberations comprising part of a process by which government decisions and policies are formulated. To qualify for the deliberative process privilege, a document must be both "pre-decisional" and "deliberative." Documents are pre-decisional when they precede an agency decision and are prepared in order to assist an agency in arriving at its decision. Documents are deliberative when they comprise part of the process by which government decisions are made. The type of information NASA withheld under this exemption consists of a draft statement in an email containing analyses, recommendations and/or opinions expressed by an employee. NASA considered the foreseeable harm that would result from the release of this information and determined that its release would hinder the decision-making process, create a chilling effect on internal deliberations, lead to uninformed decision-making, and public confusion.

FOIA Exemption 5 U.S.C. §552 (b)(6) allows withholding of "personnel and medical files and *similar files* the disclosure of which would constitute a clearly unwarranted

invasion of personal privacy.” NASA is invoking Exemption (b)(6) to protect NASA employees mobile phone numbers and third parties email addresses, or other identifying information that could reasonably identify the third parties mentioned in these records.

FOIA Exemption 5 U.S.C. §552 (b)(7)(E) protects all law enforcement information that “would disclose techniques and procedures for law enforcement investigation or prosecution, or would disclose guidelines for law enforcement investigations or prosecution if such disclosure could reasonably be expected to risk circumvention of the law.” *See* 5 U.S.C. § 552(b)(7)(E). NASA is invoking exemption (b)(7)(E) for group email lists serve to avoid cybersecurity intrusions.

You have the right under 14 CFR §1206.700 to appeal this determination within 90 days from the date of this letter. Your appeal must be in writing and should be addressed to:

Administrator  
NASA Headquarters  
Executive Secretariat  
MS 9R17  
300 E Street, S.W.  
Washington, DC 20546  
ATTN: FOIA Appeals

The appeal should be marked, both on the envelope and the face of the appeal letter, with the legend "FREEDOM OF INFORMATION APPEAL." Your appeal should be accompanied by a copy of your original request, the 10-day extension letter and this letter, along with a brief statement of the reasons why you believe this initial decision to be in error.

To obtain further assistance or seek dispute resolution services for any aspect of your request. You may contact Ms. Fox at the following address:

National Aeronautics and Space Administration (NASA)  
Freedom of Information Act Unit  
NASA Headquarters  
Attn: Stephanie Fox  
Chief FOIA Public Liaison  
300 E Street, S.W., 5P32  
Washington D.C. 20546  
Email: [stephanie.k.fox@nasa.gov](mailto:stephanie.k.fox@nasa.gov)  
Telephone: 202-358-1553  
Fax: 202-358-4331

Additionally, you may contact the Office of Government Information Services (OGIS) at the national Archives and Records Administration to inquire about the FOIA dispute resolution services it offers. The contact information for OGIS is:

Office of Government Information Services  
National Archives and Records Administration  
8601 Adelphi Road-OGIS  
College Park, Maryland 20740-6001  
Email: [ogis@nara.gov](mailto:ogis@nara.gov)  
[Telephone: \(202\) 741-5770](tel:(202)741-5770)  
[Toll free: 1-877-684-6448](tel:1-877-684-6448)  
[Fax: \(202\) 741-5769](tel:(202)741-5769)

**Important:** Please note that contacting any agency official including the undersigned or NASA's Principal FOIA Officer and/or OGIS referenced above is not an alternative to filing an administrative appeal and does not stop the 90 day appeal clock.

In accordance with § 1206.804 (c), after consultation with the NASA Headquarters General Counsel Office, I am the official responsible for the denial of your request.

Fees for processing this request are under \$50.00, and are not being charged in accordance with 14 CFR §1206.503(c). If I can be of further assistance please feel free to contact me at <[nikki.n.gramian@nasa.gov](mailto:nikki.n.gramian@nasa.gov)> or (202) 358-0625.

Sincerely,



Nikki Gramian  
Headquarters  
Principal Agency FOIA Officer

## Daily Report for Wednesday, Feb. 20

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From: Potter, Sean (HQ-NI000) <sean.potter@nasa.gov>, Potter, Sean (HQ-NI000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=POTTER, SEAN 994123144664>  
Bcc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Morhard, James W. (HQ-AB000) <james.w.morhard@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Jurczyk, Stephen G. (HQ-AI000) <stephen.g.jurczyk@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Dimock, Jonathan W. (HQ-OA000) <jonathan.w.dimock@nasa.gov>, Eden, Brandon T. (HQ-VA010) <brandon.t.eden@nasa.gov>, Cremins, Tom (HQ-AH000) <tom.cremins-1@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Saunders, Melanie (JSC-AA000) <melanie.saunders-1@nasa.gov>, Cruz, Randy C. (HQ-AA000) <randy.c.cruz@nasa.gov>, HQ-DL-pao-directors [REDACTED] b2, [REDACTED] b2, [REDACTED] 7E [REDACTED], HQ-DL-news-chiefs [REDACTED] b2, [REDACTED] 7E [REDACTED], [REDACTED] b2, [REDACTED] 7E [REDACTED]  
Sent: February 20, 2019 7:47:44 AM EST  
Received: February 20, 2019 7:47:45 AM EST  
Attachments: DAILY REPORT 02-20-2019.docx

Good morning.

Attached and below is today's Communications Daily Report.

Thank you,

Sean Potter

NASA Communications Daily Report

Wednesday, Feb. 20

### Activities

- 9:20 to 9:40 am – International Space Station downlink with David Saint-Jacques of the Canadian Space Agency talking to Canadian media. Will air on NASA TV <<http://www.nasa.gov/live>> .
- noon to 1 pm – Japanese Public Television Interview on 3D Printed Habitat Challenge
  - o NHK, Japanese Public Television, is putting together a documentary called Cosmic Front Next. They will interview Monsi Roman, Program Manager of the NASA Centennial Challenges Program, regarding the 3D-Printed Habitat Challenge.
- Washington Post at Johnson Space Center to film Commercial Crew training
- Stargazing Live (BBC UK) at Johnson to film for Apollo 50th Anniversary
- Virgin Galactic targeted launch with four NASA-supported technologies
  - o Just over two months since its first venture to suborbital space, Virgin Galactic's SpaceShipTwo is set to fly again and test four NASA-supported technologies. The flight, taking off no earlier than Feb. 20, is the company's second mission for NASA.

- Anniversary: John Glenn becomes the first American to orbit Earth after launching on Mercury-Atlas 6 at 9:47 am EST. His spacecraft was named Friendship 7 and he flew a planned three-orbit mission. (1962)

## HQ Products

### Media Release

- 2 pm – NASA Publishes New Book of Earth Views from Space

o NASA's Earth Science Division has published a new book highlighting views of our home planet from space. This coffee-table style book is available in print, ebook, and online.

### Media Advisory

- SpaceX Demo-1 Briefings and Events Schedule (held from Tuesday)

o Media Advisory for the launch of SpaceX Demo-1 mission, including prelaunch media/social media activities at Kennedy Space Center.

## Center Products

### Blog Post

- 9:20 am – David Saint-Jacques with Canadian Media / Johnson

- 11 am – Commercial Crew Program-Boeing Orbital Flight Test-1 integrated simulation / Kennedy

o CCP blog post on the fully integrated simulation for Boeing's OFT-1 launch with participants from Boeing, United Launch Alliance, NASA, and Department of Defense participants

### Image/Video

- noon – Neutron Star Outshines Active Galactic Nuclei in Whirlpool Galaxy / JPL

o NuSTAR detects a neutron star in the Whirlpool Galaxy that outshines a pair of supermassive black holes.

- noon – Neutron Star Outshines Active Galactic Nuclei in Whirlpool Galaxy / JPL

- 11 am – CCP-Boeing Orbital Flight Test-1 integrated simulation / Kennedy

### Media Advisory

- 10 am – Tour Michoud Assembly Facility Factory / Marshall

o This advisory will invite media to tour Michoud on Feb. 28 to see progress on the Space Launch System rocket core stages for Exploration Mission-1 and Exploration Mission-2 and to attend an engine test at Stennis Space Center.

### Web Article

- 9 am – Solar wind turns Moon into chemical factory / Goddard

o When a stream of charged particles known as the solar wind careens onto the Moon's surface at 450 kilometers per second (or nearly 1 million miles per hour), they enrich the Moon's surface in ingredients that could make water.

- noon – SOFIA Uncovers Clues to the Evolution of Universe and Search for Life / Ames

o Feature about multiple results from NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA): how stars and galaxies evolve, the search for water on Jupiter's moon Europa, and a new Orion image.

- 1 pm – Tiny Neptune Moon May Have Broken from Larger Moon / Goddard

o After several years of analysis, a team of planetary scientists using NASA's Hubble Space Telescope has at last come up with an explanation for a mysterious moon around Neptune that they discovered with Hubble in 2013. One image; STScI story

- On This Day in History Apollo 9 status at L-2 weeks / Johnson

NASA Television

On Air

- 9:20 am – Expedition 58 International Space Station in-flight event for the Canadian Space Agency for Canadian Broadcasters with Flight Engineer David Saint-Jacques of CSA

- 4 pm – Video File of the International Space Station Expedition 59-60 Crew Soyuz Qualification Training at the Gagarin Cosmonaut Training Center in Star City, Russia (Recorded on Feb. 19-20; Ovchinin, Hague, Koch)

- 8 pm – NASA Explorers Digital Series – Season 1: The Cryosphere

In Production

- No productions scheduled

Social Media Activity

EARTH

- NASA Publishes New Book of Earth Views from Space

HUMANS IN SPACE

- Boeing Orbital Flight Test-1 integrated simulation

- David Saint-Jacques w/ Canadian Media / Johnson

MOON TO MARS

- Tour Michoud Assembly Facility Factory - Media Advisory

SOLAR SYSTEM AND BEYOND

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#### SPACE TECH

- Optimus Prime Spinoff Promotion and Research Challenge (Tumblr, Snapchat/Instagram/Facebook story)
- Virgin Galactic launch with four NASA-supported technologies / Armstrong

#### OTHER

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**Attachment #1**

**DAILY REPORT 02-20-2019.docx**

**Original view**

3 pages (displayed on pages 274 to 276)

# NASA Communications Daily Report

Wednesday, Feb. 20

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## **SOLAR SYSTEM AND BEYOND**

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- Solar wind turns Moon into chemical factory
- Neutron Star Outshines Active Galactic Nuclei in Whirlpool Galaxy
- SOFIA Uncovers Clues to the Evolution of Universe and Search for Life

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- Virgin Galactic launch with four NASA-supported technologies / Armstrong

## **OTHER**

- On This Day in History Apollo 9 status at L-2 weeks / Johnson

## White House Daily Communications Brief 2/20/2019

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From: Eichamer, Kristen M. (HQ-NA000) <kristen.m.eichamer@nasa.gov>, Eichamer, Kristen M. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EICHAMER, KRISTEN M 388161365460>

Bcc: Whitley, Ryan J. EOP/WHO <(b) (6)> Morhard, James W. (HQ-AB000) <james.w.morhard@nasa.gov>, Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Beutel, Allard (HQ-NI000) <allard.beutel@nasa.gov>, (b) (6) Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Eden, Brandon T. (HQ-VA010) <brandon.t.eden@nasa.gov>, (b) (6) Lee, Rebecca L. (HQ-VA000) <rebecca.l.lee@nasa.gov>, Kerwin, Mary D. (HQ-IAU000) <mary.d.kerwin@nasa.gov>, (b) (6) (b) (6) Teitelbaum, Sharon L. (HQ-NAU000) <sharon.l.teitelbaum@nasa.gov>, Rydin, Matthew M. (HQ-NA000) <matthew.m.rydin@nasa.gov>, Wenrich, Megan M. (HQ-AA000) <megan.m.wenrich@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Ashcraft, Zacch (HQ-VA010) <zacch.ashcraft@nasa.gov>, (b) (6) McDonald, Thea E. (b) (6) EOP/WHO <(b) (6)> Gillen, Suzanne M. (HQ-VA000) <suzanne.m.gillen@nasa.gov>, Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Weeks, Taylor L. (HQ-VA010) <taylor.l.weeks@nasa.gov>

Sent: February 20, 2019 9:30:25 AM EST

Received: February 20, 2019 9:30:25 AM EST

### NASA Daily Communications Brief

Wednesday, February 20, 2019

Contact: Kristen Eichamer, Deputy Press Secretary, <<mailto:kristen.m.eichamer@nasa.gov>>  
kristen.m.eichamer@nasa.gov /b6

Bettina Inclan, Associate Administrator for Communications, <<mailto:Bettina.inclan@nasa.gov>>  
Bettina.inclan@nasa.gov /202-358-2793

### Upcoming Events and Activities

February 20

\* No public events.

February 21

\* SpacELL Beresheet spacecraft to launch atop a SpaceX Falcon 9 rocket from Cape Canaveral, Florida at 8:45 p.m..

February 22

\* NASA astronauts Nick Hague and Christina Koch will be available for live satellite interviews as they undergo final training before their launch to the International Space Station, scheduled for March 14.

\* The interviews will air live on NASA TV and the NASA <<https://www.nasa.gov/nasalive>> website from 7:00-9:30 a.m.

### NASA's Top Stories

## National News Stories

1. Space News: SpaceShipTwo aim to reach space again <<https://spacenews.com/virgin-galactic-prepares-spaceshiptwo-to-fly-again/>>

\* Virgin Galactic plans to conduct a fifth test flight Feb. 20 of its suborbital spaceplane SpaceShipTwo. Weather permitting, Virgin Galactic's SpaceShip Two VSS Unity will takeoff from the Mojave Air and Space Port around 7 a.m. local time (10 a.m. Eastern time).

2. WKMG News: Cape Canaveral 'logical fit' for U.S. Space Command, Gov. Ron DeSantis says <<https://www.clickorlando.com/news/space-news/gov-desantis-space-force-combatant-command-should-be-at-cape-canaveral>>

\* NASA Administrator Jim Bridenstine tweeted his support of the directive soon after Trump signed it, adding that in 2017, a similar, bipartisan proposal received 344 votes in Congress and he voted for it.

3. Florida Today: SpaceX Falcon 9 rocket launch: What you need to know about Israel's lunar lander <<https://www.floridatoday.com/story/tech/science/space/2019/02/19/what-you-need-know-israels-lunar-lander-spacex-rocket-launch/2916075002/>>

\* The lander will travel through space for approximately two months before it attempts to touchdown on the moon. If successful, it would mark the first time a spacecraft vehicle that has mainly been privately funded lands on a planetary body, as well as being the lightest man-made object to touch down on the surface.

4. The Washington Post: And now for the weather on Mars, courtesy of new NASA lander <[https://www.washingtonpost.com/national/health-science/and-now-for-the-weather-on-mars-courtesy-of-new-nasa-lander/2019/02/19/f4045d94-3487-11e9-8375-e3dcf6b68558\\_story.html?utm\\_term=.719a66160d8c](https://www.washingtonpost.com/national/health-science/and-now-for-the-weather-on-mars-courtesy-of-new-nasa-lander/2019/02/19/f4045d94-3487-11e9-8375-e3dcf6b68558_story.html?utm_term=.719a66160d8c)>

\* Starting Tuesday, NASA's Jet Propulsion Laboratory is posting the highs and lows online , along with wind speed and atmospheric pressure from the InSight lander. On Sunday, InSight recorded a high of 2 degrees Fahrenheit (minus 17 Celsius) and a low of minus 138 degrees Fahrenheit (minus 95 Celsius).

5. Market Insider: NASA Tests Urban Drone Traffic Management in Nevada, Texas <<https://markets.businessinsider.com/news/stocks/nasa-tests-urban-drone-traffic-management-in-nevada-texas-1027965465>>

\* With these demonstrations, NASA and its partners including the Federal Aviation Administration, aim to help the commercial drone industry understand the challenges posed by flying in an urban environment. Results of the flight demonstrations also will help inform future rules, policies and traffic management procedures for operating drones safely over populated areas.

6. Houston Chronicle: What 'Branding' in This Age of Renewed Interest in Space Means for entrepreneurs <<https://www.chron.com/news/article/What-Branding-in-This-Age-of-Renewed-Interest-13625233.php>>

\* As Michael Griffin, the previous administrator of NASA said <<https://www.airspacemag.com/space/the-real-reasons-we-explore-space-18816871/#WO5L3q3XEUL8KwYw.99>> , "...we humans have, since the earliest civilizations, built monuments. We want to leave something behind to show the next generation, or the generations after that, what we did with our time here." Words like that reflect the urgency we humans have to achieve something beyond ourselves. It also reflects the expansion of space exploration from the purely public to private ventures. Entrepreneurs, and marketers in particular, need to pay attention.

7. SPACE.com: We're 'Well On Our Way' to Discovering Alien Life, NASA Chief Says <<https://www.space.com/nasa-alien-life-search-jim-bridenstine.html>>

\* None of these observations guarantee that life exists, or ever existed, on Mars, but they do increase the probability, Bridenstine stressed. "All of these things collude to say there is a lot we need to learn, and friends, we're going to do it quickly," Bridenstine said at the Feb. 13 event, which was held at NASA's Jet Propulsion Laboratory in Pasadena, California, the agency's go-to center for robotic interplanetary missions.

8. Forbes: NASA's New Mars InSight Weather Station Detects Bizarre Infrasound

<<https://www.forbes.com/sites/brucedorminey/2019/02/20/nasas-new-mars-insight-weather-station-detects-bizarre-infrasound/#40d261c16cea>>

\* NASA's first 24 hour Mars weather station has detected an unexplained, low-frequency infrasound. The infrasound was detected some 72 hours ago as it swept past a suite of detectors atop the InSight Mission lander, Cornell University planetary scientist Don Banfield told me.

9. Universe Today: Gateway Foundation Shows off Their Plans for an Enormous Rotating Space Station

<<https://www.universetoday.com/141523/gateway-foundation-shows-off-their-plans-for-an-enormous-rotating-space-station/>>

\* In all cases, the general concept involves a rotating wheel station in orbit of Earth, which would establish a human presence into space while at the same time providing artificial gravity for its inhabitants. This is an important aspect of proposed spaceflights that will take astronauts to locations in deep-space, such as Mars and farther into the Solar System (and possibly beyond).

Kristen Eichamer

Deputy Press Secretary

NASA

b6

<<mailto:kristen.m.eichamer@nasa.gov>> kristen.m.eichamer@nasa.gov

# NASA Daily Communications Brief 2/22/2019

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From: Eichamer, Kristen M. (HQ-NA000) <kristen.m.eichamer@nasa.gov>, Eichamer, Kristen M. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EICHAMER, KRISTEN M 388161365460>

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## NASA Daily Communications Brief

Friday, February 22, 2019

Contact: Kristen Eichamer, Deputy Press Secretary, <<mailto:kristen.m.eichamer@nasa.gov>>  
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Bettina Inclan, Associate Administrator for Communications, <<mailto:Bettina.inclan@nasa.gov>>  
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## Upcoming Events and Activities

February 22

\* NASA astronauts Nick Hague and Christina Koch available for live satellite interviews as they undergo final training before their launch to the International Space Station, scheduled for March 14.

\* The interviews will air live on NASA TV and the NASA <<https://www.nasa.gov/nasalive>> website from 7:00-9:30 a.m.

February 28

\* Administrator visits Lockheed Martin for Leadership Conference in Denver, Colorado. Closed to press.

\* Followed by tours of Sierra Nevada and Maxar facility tours. Open to press.

March 1

\* Administrator remarks at The Laboratory for Atmospheric and Space Physics (LASP) Gala at the University of

Colorado Bolder to celebrate the 70 year relationship between LASP and NASA. Open to press.

March 2

\* Commercial Crew SpaceX Demonstration Mission 1 launches from a Falcon 9 rocket at 2:48 AM EST from Kennedy Space Center in Cape Canaveral, Florida.

NASA's Top Stories

National News Stories

1. Watch This Space with Jim Bridenstine NASA Administrator: <<https://www.youtube.com/watch?v=JN0OWIfGWhw>> The Latest from the Moon to Mars

\* NASA administrator Jim Bridenstine looks back at 15 years of discoveries by our Opportunity rover on Mars, and forward to new commercial partnerships for missions to the Moon. Learn how we'll work with American companies to design and develop human lunar landers and reusable systems so we can return to the Moon — to stay.

2. The Washington Post: <[https://www.washingtonpost.com/national/health-science/israel-flying-to-moon-after-spacex-launch/2019/02/21/2749ce02-3648-11e9-8375-e3dcf6b68558\\_story.html?utm\\_term=.1ca704e03796](https://www.washingtonpost.com/national/health-science/israel-flying-to-moon-after-spacex-launch/2019/02/21/2749ce02-3648-11e9-8375-e3dcf6b68558_story.html?utm_term=.1ca704e03796)> Israel flying to moon after SpaceX launch

\* The four-legged Beresheet, barely the size of a washing machine, will circle Earth in ever bigger loops until it's captured by lunar gravity and goes into orbit around the moon. Touchdown would be April 11 at the Sea of Serenity.

3. Business Insider: <<https://markets.businessinsider.com/news/stocks/nasa-funded-research-creates-dna-like-molecule-to-aid-search-for-alien-life-1027973872>> NASA-Funded Research Creates DNA-like Molecule to Aid Search for Alien Life

\* The synthetic DNA includes the four nucleotides present in Earth life – adenine, cytosine, guanine, and thymine – but also four others that mimic the structures of the informational ingredients in regular DNA. The result is a double-helix structure that can store and transfer information.

4. BBC: <<https://www.bbc.com/news/science-environment-47293317>> Hayabusa-2: Japan spacecraft touches down on asteroid

\* During sample collection, the spacecraft approached the 1km-wide asteroid with an instrument called the sampler horn. On touchdown, a 5g "bullet" made of the metal tantalum was fired into the rocky surface at 300m/s.

5. Discover: <<http://blogs.discovermagazine.com/d-brief/2019/02/20/the-dangers-of-long-stays-in-deep-space/>> The Human Body Might Survive a Mission to Mars Better Than Our Minds

\* In short, researchers found lots of differences between the twins, but no large causes for concern. The two biggest threats to humans spending long periods in space come from low gravity and cosmic rays.

6. SPACE.com: <<https://www.space.com/mars-weather-reports-from-insight-lander.html>> What's the Weather on Mars? NASA's InSight Now Providing Daily Reports

\* The lander is equipped with sophisticated weather-monitoring equipment on account of one of its instruments, an <<https://www.space.com/42804-nasa-mars-insight-deploys-seismometer.html>> ultrasensitive seismometer that scientists will use to see inside the planet.

7. Business Insider: <<https://nordic.businessinsider.com/nasa-drone-submarine-could-hunt-for-sea-life-aliens-2019-2>>  
NASA is testing a new submarines that will hunt for undiscovered life –and scientists eventually want it to look for aliens on Europa

\* Their goal is to create a drone submersible so small and so light that they'll one day be able to shoot it into space to explore other oceans. Orpheus is the first step in that direction.

6. SpaceRef: <<http://spaceref.com/moon/ingredients-for-water-could-be-made-on-the-moons-surface-naturally.html>>  
Ingredients For Water Could Be Made On The Moon's Surface Naturally

\* Understanding how much water -- or its chemical components -- is available on the Moon is critical to NASA's goal of sending humans to establish a permanent presence there, said Orenthal James Tucker, a physicist at Goddard who spearheaded the simulation research.

Kristen Eichamer

Deputy Press Secretary

NASA

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Framing the Week Ahead - Office of Communications - Feb. 22

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## Framing the Week Ahead Report

For Feb. 23 – March 2, 2019

FOR INTERNAL USE ONLY

Over the past week, the age

Asteroid Belt object Ultima Thule from its New Year's flyby. Our Mars InSight Lander is sending daily weather reports from the surface of Mars. And a new NASA publication features stunning images of our home planet as can only be seen from space.

In honor of the West Virginia native and NASA "hidden figure," NASA has redesignated its Independent Verification and Validation (IV&V) Facility in Fairmont, West Virginia, as the Katherine Johnson Independent Verification and Validation Facility. The Administrator said, "I am thrilled we are honoring Katherine Johnson in this way as she is a true American icon who overcame incredible obstacles and inspired so many. It's a fitting tribute to name the facility that carries on her legacy of mission-critical computations in her honor."

This week, final preparations continue for the first uncrewed flight of our Commercial Crew Program -- the targeted March 2 launch of the Demo-1 flight of the SpaceX Crew Dragon spacecraft on a Falcon 9 rocket to the station. We'll also conduct another RS-25 engine test as an acceptance test for an engine controller for a future SLS flight. And a new show will take our viewers behind-the-scenes with experts to explore the secrets of the universe.

To learn more about what's been going on across the agency, watch the latest edition of "This Week @NASA" at:  
[https://youtu.be/U7ep1GQ\\_\\_kg](https://youtu.be/U7ep1GQ__kg)

SpaceX Commercial Crew Flight Test

NASA and SpaceX are targeting 2:48 a.m. EST on March 2 for the launch of the company's uncrewed Demo-1 flight on a SpaceX Crew Dragon spacecraft from Kennedy Space Center. This will be the first time a commercially built and operated American rocket and spacecraft designed for humans will launch to the space station. Live coverage of prelaunch and launch activities will be provided on NASA Television and the agency's website <<https://nasa.gov/live>> .

## Congressional Hearing

On Feb. 26 at 10 a.m. EST, the House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies conducts an oversight hearing on: "Understanding the Changing Climate System, and the Role of Climate Research." Speakers include: Mike Freilich, NASA Science Mission Directorate, Earth Science; Neil Jacobs, Assistant Secretary of Commerce for Environmental Observation and Prediction, National Oceanic and Atmospheric Administration (NOAA).

## Next RS-25 Engine Test

On Feb. 28, we'll conduct a RS-25 test on the A-1 Test Stand at Stennis Space Center as an acceptance test for an RS-25 engine controller for use on a future flight of our new Space Launch System rocket. There are plans to power up to 113 percent thrust level for most of the 500-second test duration. New RS-25 engines are being modified to operate at 111 percent of original thrust design. This hot fire test will mark the fourth time NASA has achieved a 113 percent power level, but the first time to test at that level for an extended period.

## NASA Science Live

This new show takes the audience behind-the-scenes with experts to explore the secrets of the universe. The first episode, "To the Moon, and Beyond," explores the science conducted on the lunar surface in the past, current missions studying the Moon and future plans to send science, robots and humans to our nearest neighbor. It airs at 3 p.m. EST (12 p.m. PST) Wednesday, Feb. 27 on the agency's website, <<https://nasa.gov/live>> NASA Television, Facebook Watch, YouTube and Ustream.

## InSight Is the Newest Mars Weather Service

You can now get weather reports from the surface of Mars – courtesy of our InSight lander at <https://mars.nasa.gov/insight/weather/>. Sensors aboard the lander recently began recording temperature, wind and air pressure information and sending it back to Earth. InSight is scheduled to continue this round-the-clock operation for at least the next two years. By the way – current low temperatures at InSight's location have typically been around minus 138 degrees Fahrenheit.

## New NASA Book Shares Beauty of Earth from Space

A new NASA publication, <<https://www.nasa.gov/press-release/new-nasa-book-shares-beauty-of-earth-from-space>> "Earth," available in hardcopy, as an ebook and online, features an array of stunning images of our home planet as can only be seen from space. There are 69 images in four categories – atmosphere, water, land, and ice and snow -- with short explanations of the science behind the images. For more details go to <https://www.nasa.gov/earth>.

## METRICS

### A Quieter Week After Opportunity's News

Compared to last week, our social media and web traffic levels returned to normal after peaking on Feb. 14-15 with the Opportunity end of mission news.

The busiest day in the past week for NASA-related news was Feb. 21, with about 3,800 media mentions of the launch of the Israeli Space IL spacecraft to the Moon and NASA's participation in the mission.

Our highest-engagement social media posts of the past week on both Facebook and Twitter wished a happy birthday to former NASA astronaut Leland Melvin (using the astronaut portrait photo with his dogs which has previously gone viral on social media) and linked to an image gallery <<https://www.nasa.gov/image-gallery/black-history-month>> of past and present NASA images for #BlackHistoryMonth. The photo reached over 1.2 million people on Facebook <<https://www.facebook.com/NASA/photos/a.67899501771/10156925164481772/?type=3>> and had 27.8 likes or reactions.

Also very popular with the public this past week were posts of the Voyager "Pale Blue Dot" photo taken nearly 30 years ago, and a Hubble image <<https://www.facebook.com/NASA/photos/a.67899501771/10156929634611772/?type=3>> of a newborn star, which is approaching 1 million Instagram likes.

## FULL SCHEDULE OF ACTIVITIES AND PRODUCTS

Saturday, Feb. 23

### Activities

\* Doug Wheelock at Intrepid Sea, Air, & Space Museum

### Products

\* Humans in Space: Johnson Image/Video: Sierra Nevada Inflatable Habitat Burst Test

### Annual Events

\* Birthday: Canadian astronaut Marc Garneau birthday (1949)

Sunday, Feb. 24

### Activities

\* NSO Family Concert: Let's Go to the Moon!, Kennedy Center for the Performing Arts

### Annual Events

\* Anniversary: Launch of STS-133 (Discovery - last mission) (2011)

Monday, Feb. 25

### Activities

\* Langley: SpaceX Dragon Capsule Drop Test

\* Doug Hurley with WWL TV New Orleans

\* Langley: HUNCH Preliminary Culinary Competition

\* JPL: Ocean Sciences Bowl Recap

\* Tracy Caldwell Dyson for Space Day Texas

- \* Joe Acaba at Congressional Texas A&M International University
- \* Drew Feustel at Workshop on Quantitative Musculoskeletal Imaging
- \* Ryan Dowdy with BBC Stargazing on nutrition in space

## Products

- \* History: Johnson Image/Video, Social Media Activity, Web Article: On This Day in Mariner 6/7 launch to Mars
- \* History: NASA HQ Social Media Activity: 50th Anniversary: Launch of Mariner 6
- \* Humans in Space: Kennedy Commercial Crew Program (CCP) Blog, NASA HQ Social Media Activity--Partnerships Spur Industry for flourishing space commerce
- \* Humans in Space: Johnson Social Media Activity: Tracy Caldwell Dyson for Space Day Texas
- \* Humans in Space: Johnson Web Article: Northrop Grumman Cygnus completes post-unberthing mission, deorbits
- \* JPL Web Article: Hydrothermal Vents and the Origins of Life
- \* Marshall Media Release: Rhea Gordon Named Marshall Center Chief Financial Officer
- \* Moon to Mars: Kennedy Blog Post, Image/Video, Social Media Activity, NASA HQ Social Media Activity: Engine Vertical Installer Arrival
- \* Moon to Mars: NASA HQ Social Media Activity: 10 Things We Can Learn About Earth by Studying the Moon (Tumblr)
- \* NASA HQ Media Release: NASA Selects New Heliophysics Mission
- \* NASA HQ Media Release, Social Media Activity: NASA Science Live Release

## Annual Events

- \* Anniversary: 50th Anniversary: Launch of Mariner 6

Tuesday, Feb. 26

## Activities

- \* NASA HQ: House Appropriations hearing: Climate Change Science
- \* Shannon Walker virtual appearance Wellesley Middle School
- \* Peninsula Executive Leadership Forum –Keynote by LaRC Associate Center Director Jill Marlowe
- \* Feb. 26 – March 7: Langley: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.
- \* Langley: HUNCH Preliminary Culinary Competition
- \* Phil Liebrecht of SCaN for Government Matters TV show
- \* Dept. of Energy Emergency Response Exercise
- \* Tracy Caldwell Dyson for Space Day Texas
- \* JSC Deputy Director Vanessa Wyche with NTV Houston
- \* KSC: National Geographic photo shoot at Swamp Works lab

## Products

- \* Earth: Goddard Web Feature: GPM Right as Rain on 5th Birthday
- \* Langley Exhibit; Image/Video; Social Media Activity: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.
- \* Goddard Other: Amber Straughn featured on Science Channel's How the Universe Works
- \* History: Johnson Image/Video, Social Media Activity, Web Article: NASA Knowledge video release: Gordon Cooper
- \* History: Johnson Image/Video, Social Media Activity, Web Article: On This Day in History Apollo 9 status at L-1 week

- \* Humans in Space: Johnson Social Media Activity: Tracy Caldwell Dyson for Space Day Texas
- \* Humans in Space: Kennedy Commercial Crew Program (CCP) Blog, NASA HQ Social Media Activity: CCP missions poised to expand station research
- \* Langley Social Media Activity: Peninsula Executive Leadership Forum
- \* Moon to Mars: Marshall Image/Video, NASA HQ Social Media Activity: Image - Liquid Hydrogen Tank Flight Article Receives Thermal Protection
- \* Solar System and Beyond: JPL Blog Post, NASA HQ Social Media Activity: "Sholz's Star" blog post
- \* Solar System and Beyond: Goddard Web Article, NASA HQ Social Media Activity: First Private Moon Landing Attempt? NASA's On Board
- \* Space Tech: Goddard Web Article, NASA HQ Social Media Activity: Goddard Technologists, Scientists Prepare for New Era of Human Exploration
- \* Space Tech: NASA HQ Image/Video, Social Media Activity: Faces of Technology video: Arthur Werkheiser (Marshall)
- \* Space Tech, Humans in Space: Goddard Image/Video, Social Media Activity, NASA HQ Social Media Activity: Robotic Refueling Mission 3 Tool Assembly by Astronauts

#### Annual Events

- \* Anniversary: Kepler team announces 715 exoplanets (2014)

Wednesday, Feb. 27

#### Activities

- \* NASA and Dept. of Health and Human Services (HSS) talk with Federal News Radio about partnership
- \* Dept. of Energy Emergency Response Exercise
- \* On NASA TV at 3 p.m.: NASA Science Live
- \* Feb. 26 – March 7: Langley: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.

#### Products

- \* Humans in Space: Kennedy: Commercial Crew Program (CCP) Blog Posts--Weather, Pad History, prelaunch briefing promo
  - \* Langley Exhibit; Image/Video; Social Media Activity: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.
  - \* NASA HQ Contract Release: JSC Protective Services Contract
  - \* NASA HQ Social Media Activity: NASA Science Live
  - \* Solar System and Beyond: JPL Image/Video: Merging Galaxies Image Advisory via GOALS (Great Observatories All-sky LIRG Survey)
- \* Space Tech: NASA HQ Web Article: Winners of the Animal Tracking Ideation Challenge Announced

#### Annual Events

- \* Anniversary: Global Precipitation Measurement Mission launch (2014)

Thursday, Feb. 28

#### Activities

\* SpaceX Demo-1 prelaunch news briefing

\* RS-25 Engine Test, A-1 Test Stand, Stennis

\* ISS Media Downlink: David Saint Jacques for CSA PAO Event

\* Media and Stakeholder tours: Michoud Assembly Facility

\* Dept. of Energy Emergency Response Exercise

\* Langley Participates in Kentucky Aerospace Day

\* Feb. 26 – March 7: Langley: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.

\* Orion's Stu McClung with "Casual Space" podcast

\* CSA PAO Event called "Let's Talk Science"

\* BBC Interview for Stargazing: Stennis

\* JSC Deputy Director Vanessa Wyche at Conway High School in S.C.

\* JSC scientist (TBD) with Science Magazine

## Products

\* Earth: Goddard Image/Video, Web Article, NASA HQ Social Media Activity: 2015-16 El Nino Boosts Global Disease Outbreaks

\* Humans in Space: Johnson Blog Post, Image/Video, Social Media Activity: CSA PAO Event called "Let's Talk Science"

\* Humans in Space: Kennedy: Commercial Crew Program (CCP) Blog Posts: launch weather, post-LRR update, paving the way

\* Humans in Space: Johnson Image/Video, Media Release: Astronaut Kathryn (Kay) Hire Retires from NASA

\* Humans in Space: Johnson Image/Video, Social Media, Web Article: Houston We Have a Podcast "Next Generation of Spaceflight Leaders"

\* Humans in Space: NASA HQ Web Article: NASA selects research for Human Health Countermeasures & Human Factors

\* Langley Exhibit; Image/Video; Social Media Activity: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.

\* MSFC Social Media Activity: Media tour of Michoud Assembly Facility

\* Moon to Mars: Stennis Image/Video, Media Release, Social Media Activity, Web Article: RS-25 Engine Test

\* Solar System and Beyond: NASA HQ other: (To Be Confirmed) Webb Telescope update: NASA response to Webb Independent Review Board recommendations

\* Solar System and Beyond: (To Be Confirmed) Goddard posts Space Telescope Science Institute web article: NASA's Webb Telescope Will Study Iconic Supernova

## Annual Events

\* Anniversary: Gemini IX Crew (See & Bassett) killed in T-38 accident (1966)

Friday, March 1

## Activities

\* KSC: SpaceX Demo-1 NASA Social Briefing

\* Media Availabilities for Experts to discuss SpaceX Demo-1 flight test

\* Feb. 26 – March 7: Langley: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.

- \* Death Valley Dark Sky Festival
- \* BBC TV Show Stargazing Interviews Space Launch System at Michoud
- \* Women's History Month (March)

## Products

- \* Humans in Space: Kennedy: Commercial Crew Program (CCP) Blog Posts: Weather forecast, Crew Dragon ready, live coverage promo
- \* Humans in Space: Johnson Other, Image/Video, Social Media Activity, Web Article: Houston We Have a Podcast "Next Generation of Spaceflight Leaders"
- \* Langley Exhibit; Image/Video; Social Media Activity: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.
- \* Solar System and Beyond: JPL Blog Post: Planet Types blog post
- \* Solar System and Beyond: Goddard Image/Video: Hubble Friday image and caption
- \* Wallops Media Advisory, Social Media Activity: Astronomy Night Celebrates the Moon and Apollo's 50th at NASA Wallops Flight Facility Visitor Center on March 15

Saturday, March 2

## Activities

- \* Mission Operations: SpaceX/DM-1 launch, uncrewed test flight
- \* Feb. 26 – March 7: Langley: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.
- \* Death Valley Dark Sky Festival

## Products

- \* Humans in Space: Johnson Blog Post, Image/Video, Media Release, Social Media Activity: SpaceX/DM-1 launch, uncrewed test flight
- \* Humans in Space: Kennedy Commercial Crew Program (CCP) Blog posts--launch day activities
- \* Langley Exhibit; Image/Video; Social Media Activity: NASA STEM Awareness at the Central Intercollegiate Athletic Association (CIAA), Charlotte, N.C.

## Annual Event

- \* Anniversary: Pioneer 10 (1st probe to fly by Jupiter) launch (1972)

## FW: Demo-1 launch Apo

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Sent: February 22, 2019 6:29:01 PM EST

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Jim,

I know you have spoken with Chris about this, but as we are now moving forward wanted to make sure I can confirm him as an "embed" for DM 1.

Bettina Inclán

Associate Administrator for Communications

NASA

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202-358-2793 (desk)

From: Davenport, Christian [REDACTED] (b) (6)  
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Cc: Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>  
Subject: Demo-1 launch

Hi Bettina,

So nice finally meeting you in person yesterday. We really appreciated Jim's openness not just in having the media roundtable but also opening the industry day. And as it turned out, it all worked perfectly into the story we had been working on about efforts to return to the lunar surface, which is leading the homepage right now.

I wanted to check in because we had chatted with Jim a coupe of weeks ago about "embedding" with him and Bob Behnken and Doug Hurley during the SpaceX Demo-1 launch on March 2. He said he was all for it, and has supported our efforts to tell the story of the return of human spaceflight from U.S. soil at every step. As you know, we're partnering with the Discovery Channel on the project and have a meeting scheduled with you guys on March 5. But I did want to check in about our ability to spend time with Jim and the astronauts leading up to and during the launch on the 2nd. We're eager to do it and think it will be an important moment to capture.

Many thanks!

Best,

Chris Davenport

The Washington Post

Author of The Space Barons: Elon Musk, Jeff Bezos and the Quest to Colonize the Cosmos

<<https://www.amazon.com/Space-Barons-Bezos-Colonize-Cosmos/dp/1610398297>>

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## DAILY REPORT 02-26-2019

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From: Brown, Katherine M. (HQ-NI000) <katherine.m.brown@nasa.gov>, Brown, Katherine M. (HQ-NI000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BROWN, KATHERINE M 152017014703>

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Bcc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Jurczyk, Stephen G. (HQ-AI000) <stephen.g.jurczyk@nasa.gov>, Dimock, Jonathan W. (HQ-OA000) <jonathan.w.dimock@nasa.gov>, Eden, Brandon T. (HQ-VA010) <brandon.t.eden@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Saunders, Melanie (JSC-AA000) <melanie.saunders-1@nasa.gov>, HQ-DL-pao-directors <pao-directors@lists.hq.nasa.gov>, HQ-DL-news-chiefs <news-chiefs@lists.hq.nasa.gov>, (b)(2) and (b)(7)(E) Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>

Sent: February 26, 2019 7:43:23 AM EST

Received: February 26, 2019 7:43:24 AM EST

Attachments: DAILY REPORT 02-26-2019.docx

Good morning,

Please see the attached and below for today's Communications Daily Report.

Thank you,

Katherine

NASA Communications Daily Report

Tuesday, Feb. 26

Activities

- 7 to 9 am – Peninsula Executive Leadership Forum at the Virginian Peninsula Chamber of Commerce
  - o NASA's Langley Research Center's Associate Center Director Jill Marlowe to provide keynote address on center transformation and current activities.
- 9 to 10 am - NASA STEM Awareness at the CIAA
  - o Langley's Office of STEM Engagement is collaborating with Central Intercollegiate Athletic Association (CIAA) to participate in multiple STEM activities from February 25 to March 2 in Charlotte, NC.
  - o Langley's Associate Director Clayton Turner will be in attendance. Other invited NASA leaders include: Deputy Director MUREP and Dr. Roosevelt Johnson, Special Advisor for STEM Engagement.
- 9 am to noon– HUNCH Preliminary Culinary Competition
  - o Langley's Assistant Center Director Clayton Turner attending two-day event where local high school culinary teams compete to determine which teams will participate in the final culinary challenge at Johnson's Final Culinary

Competition in April.

- o A taste-testing panel of Langley personnel and industry experts will provide feedback to the teams.
- 10 to 11 am – House Appropriations Hearing: Climate Change Science in Washington D.C (not on NASA TV, but the House will live stream it at: <https://youtu.be/RZQQXzJf8CY>)
- o House Appropriations CJS Subcommittee oversight hearing: “Understanding the Changing Climate System, and the Role of Climate Research.”
- o Testifying: Mike Freilich, NASA SMD Earth Science; Neil Jacobs, Asst. Secretary of Commerce for Environmental Observation and Prediction, NOAA
- 1 to 2 pm – Phil Liebrecht of SCaN for Government Matters TV show with Francis Rose
- o Taping at WJLA-TV studios for TV program an episode of Government Matters dedicated to the topic of space – in partnership with Peraton – to cover the future of space communications technology, ground operations, and the Internet of Things.
- 1 to 2 pm – National Geographic photo shoot at Swamp Works lab - Kennedy Space Center
- o National Geographic will visit Kennedy for a photo shoot in the Swamp Works laboratory
- NASA's Johnson Space Center Deputy Director Vanessa Wyche with NTV Houston
- o Johnson Deputy Director Vanessa Wyche with NTV Houston for on-camera story to highlight her career journey at NASA.
- NASA astronaut Tracy Caldwell Dyson for Space Day Texas
- Department of Energy Emergency Response Exercise at NASA's Kennedy Space Center
- o DOE is conducting an emergency response exercise in Brevard County, Florida, to test preparedness for a launch accident involving a nuclear-powered spacecraft (similar to Mars 2020). Not a public-visible event.
- o NASA and other federal and local agencies are supporting this exercise. Part of the exercise takes place at Kennedy.
- NASA astronaut Shannon Walker virtual appearance Wellesley Middle School
- o Shannon Walker virtual appearance Wellesley Middle School to talk about the importance of STEM
- Anniversary: Kepler team announces 715 exoplanets in 2014
- o NASA's Kepler mission announced the discovery of 715 new planets  
[<https://www.nasa.gov/press/2014/february/nasas-kepler-mission-announces-a-planet-bonanza-715-new-worlds>](https://www.nasa.gov/press/2014/february/nasas-kepler-mission-announces-a-planet-bonanza-715-new-worlds) . These newly-verified worlds orbit 305 stars, revealing multiple-planet systems much like our own solar system.

HQ Products

Image/Video

- 10 am – Faces of Technology video: Arthur Werkheiser
  - o Faces of Technology 1-minute video featuring Arthur Werkheiser from Marshall Space Flight Center and his work with cryo propellants.

#### Center Products

#### Blog Post

- "Sholz's Star" blog post / JPL
  - o Blog post for <https://exoplanets.nasa.gov/blog> about a star that may have disrupted the Oort Cloud.
- 1 pm – Commercial Crew Program Blog -- CCP missions poised to expand station research / Kennedy
  - o CCP Missions Poised to Expand Station Research--part of lead-up to Demo-1 launch. Focused on benefits of station research and how CCP will allow for more time to perform research.

#### Image/Video

- 1 pm – Image -Liquid Hydrogen Tank Flight Article Receives Thermal Protection / Marshall
  - o The liquid hydrogen tank for SLS has received thermal protection application. This is the largest piece of flight hardware to receive thermal protection at Marshall.
- NASA Knowledge video release: NASA astronaut Gordon Cooper / Johnson
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#### Other

- 10 pm – Amber Straughn featured on Science Channel's How The Universe Works / Goddard
  - o Astrophysicist Amber Straughn will be featured in some upcoming How The Universe Works Season 7 episodes.
  - o Here are the upcoming episodes she will be featured in: Life – Feb. 26th; Earth 2.0 – March 5.

#### Web Article

- 9 am – First Private Moon Landing Attempt? NASA's On Board / Goddard
  - o NASA seized the opportunity to contribute to this herculean experiment by a small group of passionate engineers building Israel's first machine to leave Earth's orbit.
- 11 am – Goddard Technologists, Scientists Prepare for New Era of Human Exploration / Goddard
  - o As NASA celebrates the golden anniversary of the first Moon landing later this year, scientists, engineers and technologists are preparing for a new era of human exploration. Other notes: This is accompanied by a Goddard-Only Sidebar - Five Teams Win NASA DALI Awards to Advance Future Lunar Missions

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  - o Web feature on the mission objective for the CCP SpaceX Demonstration Mission-1
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  - o On This Day in History Web Feature, social media on Apollo 9 status at L-1 week, including start of countdown and crew colds that delayed the launch.
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- Noon - Johnson Producer Jason Clemons conducts Interviews on the History of the Space Station in the NTV Studio
- NASA Television Headquarters Crew departs DC for KSC for SpaceX Live Shots

## Social Media Activity

## EARTH

- How NASA Studies Rain (Tumblr, Snapchat/Instagram/Facebook story)

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- Commercial Crew Program Blog - missions poised to expand station research
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- Faces of Technology video: Arthur Werkheiser
- Goddard Technologists, Scientists Prepare for New Era of Human Exploration

## OTHER

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**Attachment #1**

**DAILY REPORT 02-26-2019.docx**

**Original view**

4 pages (displayed on pages 1863 to 1866)

# NASA Communications Daily Report

Tuesday, Feb. 26

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## NASA Daily Communications Brief 2/26/2019

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From: Eichamer, Kristen M. (HQ-NA000) <[kristen.m.eichamer@nasa.gov](mailto:kristen.m.eichamer@nasa.gov)>, Eichamer, Kristen M. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=EICHAMER, KRISTEN M 388161365460>

Bcc: Whitley, Ryan J. EOP/WHO <[james.w.morhard@nasa.gov](mailto:james.w.morhard@nasa.gov)>, Bridenstine, James F. (HQ-AA000) <[james.f.bridenstine@nasa.gov](mailto:james.f.bridenstine@nasa.gov)>, DeWit, Jeff (HQ-IA000) <[jeffrey.j.dewit@nasa.gov](mailto:jeffrey.j.dewit@nasa.gov)>, Beutel, Allard (HQ-NI000) <[allard.beutel@nasa.gov](mailto:allard.beutel@nasa.gov)>, (b) (6) Jacobs, Bob (HQ-NA000) <[bob.jacobs@nasa.gov](mailto:bob.jacobs@nasa.gov)>, Eden, Brandon T. (HQ-VA010) <[brandon.t.eden@nasa.gov](mailto:brandon.t.eden@nasa.gov)>, (b) (6) Lee, Rebecca L. (HQ-VA000) <[rebecca.l.lee@nasa.gov](mailto:rebecca.l.lee@nasa.gov)>, Kerwin, Mary D. (HQ-IAU000) <[mary.d.kerwin@nasa.gov](mailto:mary.d.kerwin@nasa.gov)>, (b) (6) Teitelbaum, Sharon L. (HQ-NA000) <[sharon.l.teitelbaum@nasa.gov](mailto:sharon.l.teitelbaum@nasa.gov)>, Rydin, Matthew M. (HQ-NA000) <[matthew.m.rydin@nasa.gov](mailto:matthew.m.rydin@nasa.gov)>, Wenrich, Megan M. (HQ-AA000) <[megan.m.wenrich@nasa.gov](mailto:megan.m.wenrich@nasa.gov)>, Sherman, Gabriel J. (HQ-AH000) <[gabriel.j.sherman@nasa.gov](mailto:gabriel.j.sherman@nasa.gov)>, Ashcraft, Zacch (HQ-VA010) <[zacch.ashcraft@nasa.gov](mailto:zacch.ashcraft@nasa.gov)>, (b) (6) McDonald, Thea E. EOP/WHO <[taylor.l.weeks@nasa.gov](mailto:taylor.l.weeks@nasa.gov)>, (b) (6) Gillen, Suzanne M. (HQ-VA000) <[suzanne.m.gillen@nasa.gov](mailto:suzanne.m.gillen@nasa.gov)>, Inclan, Bettina (HQ-NA000) <[bettina.inclan@nasa.gov](mailto:bettina.inclan@nasa.gov)>, Weeks, Taylor L. (HQ-VA010) <[taylor.l.weeks@nasa.gov](mailto:taylor.l.weeks@nasa.gov)>

Sent: February 26, 2019 10:03:35 AM EST  
Received: February 26, 2019 10:03:36 AM EST

### NASA Daily Communications Brief

Tuesday, February 26, 2019

Contact: Kristen Eichamer, Deputy Press Secretary, <<mailto:kristen.m.eichamer@nasa.gov>>  
[kristen.m.eichamer@nasa.gov](mailto:kristen.m.eichamer@nasa.gov) / (b)(2) and (b)(6)

Bettina Inclan, Associate Administrator for Communications, <<mailto:Bettina.inclan@nasa.gov>>  
[Bettina.inclan@nasa.gov](mailto:Bettina.inclan@nasa.gov) / 202-358-2793

### Upcoming Events and Activities

February 28

\* Administrator visits Lockheed Martin for Leadership Conference in Denver, Colorado. Closed to press.

\* Followed by tours of Sierra Nevada and Maxar facility tours. Open to press.

March 1

\* Administrator remarks at The Laboratory for Atmospheric and Space Physics (LASP) Gala at the University of Colorado Boulder to celebrate the 70 year relationship between LASP and NASA. Open to press.

March 2

\* Commercial Crew SpaceX Demonstration Mission 1 launches from a Falcon 9 rocket at 2:48 AM EST from Kennedy Space Center in Cape Canaveral, Florida.

## NASA's Top Stories

### National News Stories

1. Fox News: <<https://www.foxnews.com/science/hidden-figures-scientist-katherine-johnson-gets-nasa-facility-named-in-her-honor>> 'Hidden Figures' scientist Katherine Johnson gets NASA facility named in her honor

\* The newly renamed facility, which is in Fairmont, W.Va., will now be known as the Katherine Johnson Independent Verification and Validation Facility. The program housed at the facility monitors the software used to track <<https://www.nasa.gov/centers/ivv/about/index.html>> high-profile NASA missions.

2. Wired: <<https://www.wired.com/story/nasas-space-shuttle-rises-from-the-dead-to-power-new-vehicles/>> NASA's Space Shuttle Rises From the Dead to Power New Vehicles

\* A <[https://www.nasa.gov/saa/domestic/28205\\_Boeing\\_28205\\_Annex1\\_Signed.pdf](https://www.nasa.gov/saa/domestic/28205_Boeing_28205_Annex1_Signed.pdf)> Space Act Agreement signed in 2018 shows that the aerospace company wants to include a handful of the shuttle's smaller orbital maneuvering engines in a secret Department of Defense project. Known as the R40b, the engine was originally developed to allow shuttles to adjust their speed and direction while in orbit.

3. CNBC: <<https://www.cnbc.com/2019/02/25/elon-musk-spacex-rocket-starship-will-be-good-for-creating-moon-base.html>> Elon Musk says SpaceX rocket Starship will 'be good' for creating a moon base

\* NASA Administrator Jim Bridenstine told CNBC earlier this month that <<https://www.cnbc.com/2019/02/14/nasas-bridenstine-on-spacex-and-boeing-the-moon-and-life-on-mars.html>> he expects NASA will return to the moon soon, saying "the goal is to have the first human lander on the surface of the moon in 2024." Bridenstine said NASA's lunar plans are also "likely to be a public-private partnership," meaning the government agency will partner with companies like SpaceX to achieve this goal.

4. The Washington Post: <[https://www.washingtonpost.com/national/health-science/nasa-spacex-ok-1st-test-flight-of-crew-capsule-next-week/2019/02/22/3a1f7c0c-3706-11e9-8375-e3dcf6b68558\\_story.html?noredirect=on&utm\\_term=.90842bdf0514](https://www.washingtonpost.com/national/health-science/nasa-spacex-ok-1st-test-flight-of-crew-capsule-next-week/2019/02/22/3a1f7c0c-3706-11e9-8375-e3dcf6b68558_story.html?noredirect=on&utm_term=.90842bdf0514)> NASA, SpaceX OK 1st test flight of crew capsule next week

\* The SpaceX Falcon 9 rocket scheduled to soar at 2:48 a.m. EST on March 2 is brand new. NASA does not want recycled boosters for these crew capsule missions. SpaceX plans to conduct a high-altitude launch abort in April, reusing this same capsule.

5. Discover Magazine: <<http://blogs.discovermagazine.com/d-brief/2019/02/22/nasa-picks-science-experiments-to-go-to-the-moon-this-year/#.XHPzGc9Khgc>> NASA Picks Science Experiments to Send to the Moon This Year

\* The science payloads cover a wide range of topics. One will measure the chemical composition of the lunar surface. Another will detect how much radiation astronauts would be exposed to on the moon

6. The Verge: <<https://www.theverge.com/2019/2/23/18236539/nasa-new-horizons-2014-mu69-kuiper-belt-object-closeup>> NASA's New Horizons sends back the clearest view yet of a flattened space peanut

\* Now, <<http://pluto.jhuapl.edu/News-Center/News-Article.php?page=20190222>> Johns Hopkins University Applied Physics Laboratory has released the best photos yet. They show off the surface of 2014 MU69 at a resolution of 110 feet per pixel, thanks to the spacecraft's telephoto Long Range Reconnaissance Imager, or LORRI.

7. BGRI: <<https://bgr.com/2019/02/25/curiosity-safe-mode-glitch-mars-nasa/>> NASA's Curiosity rover entered 'safe

'mode' on Mars, but nobody knows why

\* The robot entered a default "safe mode" which it does when something goes wrong. Engineers performed a reset of the rover after gathering some diagnostic info and it's back up and running, but the cause of the glitch remains a mystery.

8. Space Daily:

<[http://www.spacedaily.com/reports/NASA\\_funded\\_researchCreates\\_DNA\\_like\\_molecule\\_to\\_aid\\_search\\_for\\_alien\\_life\\_999.html](http://www.spacedaily.com/reports/NASA_funded_researchCreates_DNA_like_molecule_to_aid_search_for_alien_life_999.html)> NASA-funded research creates DNA-like molecule to aid search for alien life

\* This new molecular system, which is not a new life form, suggests scientists looking for life beyond Earth may need to rethink what they are looking for. The research appears in Thursday's edition of Science Magazine.

9. Harvest: <<https://nasaharvest.org/news/nasa-administrator-highlights-harvest-program-impact-uganda-world-ag-expo>> NASA Administrator Highlights Harvest Program Impact in Uganda At World Ag Expo

\* Bridenstine pointed out that this work reflects NASA's potential to contribute to improved food security: "How can we save lives, grow more food, feed more people around the world, save water resources and do it in a way that maximizes the utility [of data] for everybody, not just in the [US], but around the world," indicating critical issues where NASA can contribute internationally through its satellite data.

Kristen Eichamer

Deputy Press Secretary

NASA

(b)(2) and (b)(6)

<<mailto:kristen.m.eichamer@nasa.gov>> kristen.m.eichamer@nasa.gov

## NASA VIP Guest List: SpaceX Demo-1 launch

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From: Maynard, Katie L. (HQ-NL000) <katie.l.maynard@nasa.gov>, Maynard, Katie L. (HQ-NL000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MAYNARD, KATIE L 5603122822F7>

To: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Morhard, James W. (HQ-AB000) <james.w.morhard@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>, Morhard, James W. (HQ-AB000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Morhard, James W 253267755878>, Sherman, Gabriel J. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Sherman, Gabriel J 895977475423>, Karika, Janet C. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>, Inclan, Bettina (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Inclan Agen, Bettina G 798281864e1d>

Cc: Beutel, Allard (HQ-NI000) <allard.beutel@nasa.gov>, Wenrich, Megan M. (HQ-AA000) <megan.m.wenrich@nasa.gov>, Simms, Natalie L. (HQ-AB000) <natalie.l.simms@nasa.gov>, Steele, Cindy (HQ-NL000) <cindy.steele-1@nasa.gov>, Young, Denise (HQ-NL000) <denise.young-1@nasa.gov>, Beutel, Allard (HQ-NI000) </O=NASA/OU=JSC/cn=Recipients/cn=719422164>, Wenrich, Megan M. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Wenrich, Megan M 8871290338c2>, Simms, Natalie L. (HQ-AB000) </O=NASA/OU=JSC/cn=Recipients/cn=nsimms>, Steele, Cindy (HQ-NL000) </O=NASA/OU=JSC/cn=Recipients/cn=115393752>, Young, Denise (HQ-NL000) </O=NASA/OU=JSC/cn=Recipients/cn=639251705>

Sent: February 27, 2019 1:09:42 PM EST

Received: February 27, 2019 1:09:43 PM EST

Attachments: SpaceX Demo-1 NASA Administrator\_OLIA\_OIIR VIP Guest List.docx

Good Afternoon,

Attached is the NASA VIP guest list for Saturday's SpaceX Demo-1 Launch.

Please let me know if you have any questions.

Thanks,

Katie L. Maynard

NASA Office of Communications

Protocol Officer

O: 202-358-2031

C: [REDACTED] (b)(2) and (b)(6)

Katie.l.maynard@nasa.gov <mailto:Katie.l.maynard@nasa.gov>



**Attachment #1**

**SpaceX Demo-1 NASA Administator\_OLIA\_OIIR VIP Guest List.docx**

**Original view**

2 pages (displayed on pages 1938 to 1939)

**SpaceX Demo-1 Launch**  
**Kennedy Space Center, Florida**  
**LC-39A**  
**March 2, 2019 | 2:48 a.m. ET**  
**NASA VIP Guest List**

**Administrator**

1. Hon. Mr. Daniel Elwell, Acting Federal Aviation Administration Administrator
2. Mr. Carlos Alfaro, Guest of Hon. Mr. Elwell
3. Mr. Wayne Monteith, Guest of Hon. Mr. Elwell
4. Ms. Brenda Roberts, Deputy Associate Director of OPM Employee Services
5. Mr. Brandon Roberts, Guest of Ms. Roberts
6. Mr. Michael Beavin, National Space Council
7. Mr. Brian Harrison, Deputy Chief of Staff, Department of Health and Human Services
8. Mr. Edward Harrison, Guest of Mr. Harrison
9. Ms. Jackie Keshian, OSTP
10. Mr. Paul Jester, Guest of Ms. Keshian

**Office of Legislative and Intergovernmental Affairs**

1. Mr. Nicholas Lisowski, Legislative Aide, Representative Westerman (AR-04)
2. Mr. Zach Lowery, Legislative Aide, Representative Marshall (KS-01)
3. Mr. Moran Matteo, Legislative Correspondent (Space Policy), Senator Cotton (AR)
4. Mr. Bob Schwalbach, Chief of Staff, Delegate Sablan, (MP-00)
5. Guest of Mr. Schwalbach
6. Ms. Kendall Kalagher
7. Guest of Kendall Kalagher
8. Ms. Kendall Dehnel, Legislative Correspondent, Representative McMorris Rodgers
9. Ms. Chelsea Flenar, Legislative Aide, Representative Sires (NJ-08)
10. Mr. Greg Flenar, Guest of Ms. Flenar
11. Mr. Isiah Akin, Legislative Director, Senator Wyden (OR)
12. Mr. Tom Rice, Congressman, U.S. House of Representatives
13. Guest of Mr. Tom Rice
14. Guest of Mr. Tom Rice
15. Mr. Dan Hillenbrand, Policy Advisor, Senator Inhofe (OK)
16. Mr. Jay Campbell
17. Mr. Andrew Kohlrieser, Legislative Aide, Representative Huizenga (MI-02)
18. Mr. Zach Eckstein
19. Ms. Alexa Green, Scheduler, Senator Risch (ID)
20. Mr. Anton Castaneda, Legislative Aide, Representative Hurd (TX-23)
21. Guest of Mr. Castaneda
22. Ms. Erin Waldron, Director of Community and Economic Development, Representative Val Demings (FL-10)
23. Mr. JK Spangler, DOD Fellow, Representative Gabbard (HI-02)

As of 12:01 PM 2/27/19

24. Mr. David Podvia, Staff Assistant, Representative Rutherford (FL-04)
25. Ms. Amanda Wallace, Staff, Representative Rutherford
26. Guest of Ms. Wallace
27. Mr. Allen Klump, Chief of Staff, Representative Duncan (SC-03)
28. Mr. Timothy Scott McAbee, Guest of Mr. Klump
29. Ms. Tammy Ko, Staff, Representative Duncan (SC-03)
30. Mr. Zaakary Barnes, Legislative Aide, Representative Axne (IA-03)
31. Mr. Nathan Davis, Guest of Mr. Barnes
32. Mr. Gus Ashton, Legislative Director, Representative Spano (FL-15)
33. Mr. Skip Ashton, Guest of Mr. Ashton
34. Mr. Gary Timmins, Senior Policy Advisor, Representative Foster (IL-11)
35. Ms. Katie Brenneman, Guest of Mr. Timmins
36. Ms. Jennifer Treutel, Staff, Senator Klobuchar (MN)
37. Ms. Amy Treutel, Guest of Ms. Treutel
38. Mr. Andrew Bell, Chief of Staff, Representative Budd (NC-13)
39. Mr. Loganathan Naidu, Guest of Mr. Bell
40. Mr. Brad Korten, Legislative Aide, Representative Watson Coleman (NJ-12)
41. Mr. Kevin Rambosk, Legislative Director, Representative Dingell (MI-12)
42. Mr. Frank Lucas, Congressman (OK-03), U.S. House of Representatives
43. Mr. Tom Hammond, Staff, House SST
44. Ms. Kortney Wesley, District Director, Representative Lawson (FL-05)
45. Mr. Steven Cary, District Director, Representative Crist (FL-13)
46. Mr. Gershom Faulker, Representative Crist (FL-13)

### **Office of International and Interagency Relations**

#### *Centre national d'études spatiales (CNES)*

1. Mr. Norbert Paluch, Counselor for Space and CNES Representative
2. Mr. Adrien Poiret, Captain, Defence Mission
3. Mr. Qing Fu, Spouse of Norbert Paluch

#### *European Space Agency (ESA)*

4. Ms. Micheline Tabache, Head ESA Washington Office
5. Mr. Bernardo Patti, ISS Program Manager, ESA
6. Mr. Eric van der Wal, Resident Engineer, ESA

As of 12:01 PM 2/27/19

## FOR REVIEW: Statements on Demo1

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From: Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Inclan, Bettina (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=INCLAN AGEN, BETTINA G 798281864E1D>

To: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>

Cc: Rydin, Matthew M. (HQ-NA000) <matthew.m.rydin@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Rydin, Matthew M. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Rydin, Matthew M 888091287b00>, Sherman, Gabriel J. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Sherman, Gabriel J 895977475423>, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>

Sent: February 27, 2019 6:55:29 PM EST

Received: February 27, 2019 6:55:29 PM EST

Below, please review two statements on Demo 1 -b5 [redacted]. Please let us know if you have edits. Once you give us the OK, we will send to the team and have them ready for use.

DM-1 b5 [redacted]

b5 [redacted]

to

b5 [redacted] Demo-1 Mission

b5 [redacted]

b5 [redacted]

Bettina Inclán

Associate Administrator for Communications

NASA

(b)(2) and (b)(6) (cell)

202-358-2793 (desk)

## Daily Report for Thursday, Feb. 28

---

From: Potter, Sean (HQ-NI000) <sean.potter@nasa.gov>, Potter, Sean (HQ-NI000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=POTTER, SEAN 994123144664>

To: Potter, Sean (HQ-NI000) <sean.potter@nasa.gov>, Potter, Sean (HQ-NI000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=POTTER, SEAN 994123144664>

Bcc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Morhard, James W. (HQ-AB000) <james.w.morhard@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Jurczyk, Stephen G. (HQ-AI000) <stephen.g.jurczyk@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>, Dimock, Jonathan W. (HQ-OA000) <jonathan.w.dimock@nasa.gov>, Eden, Brandon T. (HQ-VA010) <brandon.t.eden@nasa.gov>, Cremins, Tom (HQ-AH000) <tom.cremins-1@nasa.gov>, Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, Saunders, Melanie (JSC-AA000) <melanie.saunders-1@nasa.gov>, Cruz, Randy C. (HQ-AA000) <randy.c.cruz@nasa.gov>, HQ-DL-pao-directors <b2, b7E, (b)(2) and (b)(7)E>, HQ-DL-news-chiefs <b2, b7E, (b)(2) and (b)(7)E>,

Sent: February 28, 2019 7:48:07 AM EST

Received: February 28, 2019 7:48:08 AM EST

Attachments: DAILY REPORT 02-28-2019.docx

Good morning.

Attached and below is today's Communications Daily Report.

Thank you,

Sean Potter

### NASA Communications Daily Report

Thursday, Feb. 28

#### Activities

- SLS/RS-25 Engine Test at Stennis
  - o 8 to 9 am – Media and stakeholder touring Michoud to view SLS hardware and progress, then attending RS-25 test at Stennis.
  - o 11 am to noon – BBC filming interviews for its television show Stargazing; interviews with reps from the SLS Liquid Engines Office about the RS-25 engine and the test.
  - o 2 to 4:30 pm – Engine test. Will air on NASA TV <<https://www.nasa.gov/live>>
- SpaceX Demo-1 prelaunch events
  - o 11 am to noon – SpaceX Demo-1 NASA Social briefing. Will air on NASA TV.
  - o 4 pm – Prelaunch briefing at Kennedy. Will air on NASA TV. Participants:

§ Kathy Lueders, manager, NASA Commercial Crew Program

§ Joel Montalbano, deputy manager, International Space Station Program

§ Hans Koenigsmann, vice president, Build and Flight Reliability, SpaceX

§ Pat Forrester, chief, Astronaut Office, Johnson Space Center

§ Melody C. Lovin, launch weather officer, 45th Weather Squadron

- [tentative] 11:30 am – James Webb Space Telescope update: NASA response to Webb Independent Review Board recommendations

o Update on NASA response to Webb Independent Review Board recommendation plan assessment. Will be posted online at <https://www.nasa.gov/webb>.

- 10:10 to 10:30 am – International Space Station downlink for the Canadian Space Agency (CSA) with astronauts David Saint-Jacques of CSA and Anne McClain of NASA. Will air on NASA TV.

- Science Magazine at Johnson to interview Human Health and Performance scientist on results of Twin Study

- Johnson Deputy Director Vanessa Wyche at Conway High School in Conway, South Carolina (her hometown)

- Orion's Stu McClung participating in "Casual Space" podcast for space enthusiasts, for broadcast late March.

- Department of Energy Emergency Response Exercise at Kennedy to test preparedness for a launch accident involving a nuclear-powered spacecraft (similar to Mars 2020).

o NASA and other federal and local agencies are supporting this exercise. Part of the exercise takes place at KSC. Not a publicly visible event.

- Langley Participates in Kentucky Aerospace Day at State Capitol in Frankfort

o NASA Langley personnel participating in third annual industry consortium with opportunity to engage with legislators to advocate and engage with leaders in the aerospace industry.

- National Geographic reporter at Goddard Robotic Operations Center (ROC)

o Reporter Kaya Berne and a photographer will visit the ROC for a one or two page photo spread on satellite servicing

- Anniversary: Gemini IX Crew Elliot See and Charlie Bassett killed in a T-38 landing accident in St. Louis (1966)

HQ Products

Web Article

- 1 pm – NASA selects research for Human Health Countermeasures & Human Factors

Center Products

Blog Post

- 1 pm – Commercial Crew Program blog posts / Kennedy
  - o Launch Weather Forecast Update
  - o Post-Launch Readiness Review/Prelaunch Briefing update
  - o Uncrewed Flight Test Will Pave Way For SpaceX Crewed Mission

#### Media Release

- Astronaut Kathryn (Kay) Hire Retires from NASA / Johnson
  - o After a 30-year career with NASA and more than 711 hours in space, NASA astronaut Kay Hire is retiring. Today is her last day with the agency.

#### Web Articles

- 10 am – NASA's Webb Telescope Will Study Iconic Supernova / Goddard
  - o Scientists will use NASA's James Webb Space Telescope to observe Supernova 1987A (SN1987A), as it is known, in order to gain new insights into the physics of the explosion and its aftermath. The feature was written by the Space Telescope Science Institute.
- 10:30 am – 2018's Biggest Volcanic Eruption of Sulfur Dioxide / Goddard
  - o The Manaro Voui volcano on the island of Ambae made the record books last year with the largest eruption of sulfur dioxide on the planet, as observed by a NASA-NOAA satellite.
- 11 am – Galactic Bubbles are Powerful Particle Accelerators / Marshall
  - o Chandra Space Telescope image feature showing "superbubbles" full of ultra-energetic particles in the galaxy NGC 3079, located 67 million light years from Earth
- 1 pm – 2015-16 El Nino Boosts Global Disease Outbreaks / Goddard
  - o The 2015-16 El Nino Southern Oscillation event created climate and environmental anomalies resulting in worldwide regional clusters of disease outbreaks.
- 2 pm – RS-25 Engine Test / Stennis

#### NASA Television

#### On Air

- 10:10 to 10:30 am – International Space Station downlink for the Canadian Space Agency (CSA) with astronauts David Saint-Jacques of CSA and Anne McClain of NASA.
- 11 am – SpaceX Demo-1 NASA Social Media Briefing from Kennedy
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- 10 am – NASA 360 Crew at recording interviews for Planetary Science Lori Glaze video in the NASA Television Studio
- Johnson Producer Jason Clemons conducts Interviews on the History of the Space Station in the Headquarters Auditorium

## Social Media Activity

## AGENCY

- Black History Month content (Twitter moment, Snapchat/Instagram/Facebook stories)

## EARTH

- 2018's Biggest Volcanic Eruption of Sulfur Dioxide 2015-16 El Nino Boosts Global Disease Outbreaks

## HUMANS IN SPACE

- David Saint-Jacques for CSA PAO Event / Johnson
- Day 1 of NASA Social at Kennedy Space Center
- SpaceX Demo-1 activities (prelaunch news briefing, NASA Social Briefing)
- Commercial Crew Program blog post-launch weather, post-LRR update, paving the way
- Astronaut Kathryn (Kay) Hire Retires from NASA
- NASA selects research for Human Health Countermeasures & Human Factors

## SOLAR SYSTEM AND BEYOND

- NASA's Webb Telescope Will Study Iconic
- Supernova Galactic Bubbles are Powerful Particle Accelerators

## MOON TO MARS

- RS-25 Engine Test at 3:30pm ET from Stennis

## OTHER

- Media & Stakeholder tours of Michoud Assembly Facility / Marshall

## FLIGHT

- Langley Participates in Kentucky Aerospace Day / Langley



**Attachment #1**

**DAILY REPORT 02-28-2019.docx**

**Original view**

3 pages (displayed on pages 2118 to 2120)

# NASA Communications Daily Report

Thursday, Feb. 28

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    - Pat Forrester, chief, Astronaut Office, Johnson Space Center
    - Melody C. Lovin, launch weather officer, 45th Weather Squadron
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### Web Article

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## CENTER PRODUCTS

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  - Post-Launch Readiness Review/Prelaunch Briefing update
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### OTHER

- Media & Stakeholder tours of Michoud Assembly Facility / Marshall

### FLIGHT

- Langley Participates in Kentucky Aerospace Day / Langley

## NASA Daily Communications Brief

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From: Teitelbaum, Sharon L. (HQ-NA000) <sharon.l.teitelbaum@nasa.gov>, Teitelbaum, Sharon L. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=TEITELBAUM, SHARON L 478736079617>

To: Henning, Alexa A. EOP/WHO <(b) (6)> Beutel, Allard (HQ-NI000) <allard.beutel@nasa.gov>, Anthony Paranzino <(b) (5)> Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Conder, Deborah A. (JSC-AD111) <deborah.a.conder@nasa.gov>, Eden, Brandon T. (HQ-VA010) <brandon.t.eden@nasa.gov>, Emily McBride <(b) (6)> Sherman, Gabriel J. (HQ-AH000) <gabriel.j.sherman@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Jessica Ditto <(b) (5)> Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Dimock, Jonathan W. (HQ-OA000) <jonathan.w.dimock@nasa.gov>, Judson Deere <(b) (5)> Lee, Rebecca L. (HQ-VA000) <rebecca.l.lee@nasa.gov>, Kerwin, Mary D. (HQ-IA000) <mary.d.kerwin@nasa.gov>, Matthew Flynn <(b) (5)> Rydin, Matthew M. (HQ-NA000) <matthew.m.rydin@nasa.gov>, Scott Pace <(b) (5)> Teitelbaum, Sharon L. (HQ-NA000) <sharon.l.teitelbaum@nasa.gov>, Thea McDonald <(b) (5)> Wenrich, Megan M. (HQ-AA000) <megan.m.wenrich@nasa.gov>, Ashcraft, Zacch (HQ-VA010) <zacch.ashcraft@nasa.gov>, Zach Parkinson <(b) (6)> Beutel, Allard (HQ-NI000) </O=NASA/OU=JSC/cn=Recipients/cn=719422164>, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>, Conder, Deborah A. (JSC-AD111) </O=NASA/OU=EXTERNAL (FYDIBOHF25SPDLT)/cn=Recipients/cn=85d019079fa44203a695436d5a112918>, Eden, Brandon T. (HQ-VA010) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Eden, Brandon T 106138835b59>, Sherman, Gabriel J. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Sherman, Gabriel J 895977475423>, DeWit, Jeff (HQ-IA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Dewit, Jeffrey J 131906394aac>, Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>, Dimock, Jonathan W. (HQ-OA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Dimock, Jonathan W 083995938acc>, Lee, Rebecca L. (HQ-VA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Lee, Rebecca L 444321256c48>, Kerwin, Mary D. (HQ-IA000) </O=NASA/OU=JSC/cn=Recipients/cn=219498350>, Rydin, Matthew M. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Rydin, Matthew M 888091287b00>, Teitelbaum, Sharon L. (HQ-NA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Teitelbaum, Sharon L 478736079617>, Wenrich, Megan M. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Wenrich, Megan M 8871290338c2>, Ashcraft, Zacch (HQ-VA010) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Ashcraft, Zacchaery D 305873880862>

Bcc: Inclan, Bettina (HQ-NA000) <bettina.inclan@nasa.gov>

Sent: March 1, 2019 1:10:01 PM EST

Received: March 1, 2019 1:10:02 PM EST

Attachments: WH Daily Brief 3.1.19.docx

NASA Daily Communications Brief

Friday, March 1, 2019

Contact: Kristen Eichamer, Deputy Press Secretary, <<mailto:kristen.m.eichamer@nasa.gov>>  
kristen.m.eichamer@nasa.gov / **b6**

Bettina Inclan, Associate Administrator for Communications, <<mailto:Bettina.inclan@nasa.gov>>  
Bettina.inclan@nasa.gov / 202-358-2793

## Upcoming Events and Activities

### March 1

- \* Deputy Administrator remarks at The Laboratory for Atmospheric and Space Physics (LASP) Gala at the University of Colorado Boulder to celebrate the 70 year relationship between LASP and NASA. Open to press.
- \* Press conference with NASA Administrator Jim Bridenstine and astronauts Bob Behnken, Doug Hurley, Victor Glover and Mike Hopkins from 4-4:30 p.m. EST at Kennedy Space Center in Cape Canaveral, Florida.
- \* NASA Administrator Bridenstine interview with CBS News at 4:30 p.m. EST.

### March 2

- NASA Administrator attends Commercial Crew SpaceX Demonstration Mission 1 launch from a Falcon 9 rocket at 2:49 a.m. EST from Kennedy Space Center in Cape Canaveral, Florida.
- News briefing with NASA Administrator Bridenstine and Elon Musk, astronauts Behnken and Hurley, NASA launch manager Steve Stich, and others at 3:30 a.m. EST.

## NASA's Top Stories

### National News Stories

1. The Washington Post: NASA needs SpaceX to prove it can fly astronauts safely. Saturday  
<[https://www.washingtonpost.com/technology/2019/03/01/nasa-needs-spacex-prove-it-can-fly-astronauts-safely-saturdays-test-flight-is-called-crucial-step/?utm\\_term=.6ffa2eb48894](https://www.washingtonpost.com/technology/2019/03/01/nasa-needs-spacex-prove-it-can-fly-astronauts-safely-saturdays-test-flight-is-called-crucial-step/?utm_term=.6ffa2eb48894)> 's test flight is called a 'crucial step.'

\* "We need to show the American public that when we put an astronaut on a rocket, they'll be safe," NASA Administrator Jim Bridenstine said in an interview late last year.

2. ABC News: SpaceX debuts new crew capsule in crucial test flight  
<<https://abcnews.go.com/Technology/wireStory/spacex-debuts-crew-capsule-crucial-test-flight-61392585>>

\* This mission is a night owl's dream, with most of the big events happening in the wee hours. Saturday's liftoff is scheduled for 2:49 a.m. to sync up with a space station arrival the next day. Unlike cargo Dragon, plucked from orbit by the station's robot arm and guided to its berth, crew Dragon will dock on its own early Sunday morning.

3. The Houston Chronicle: Canada becomes first international partner on mini-space station orbiting the moon  
<[https://www.houstonchronicle.com/news/nation-world/space/article/Canada-become-first-international-partner-on-13652359.php?src=hp\\_totn](https://www.houstonchronicle.com/news/nation-world/space/article/Canada-become-first-international-partner-on-13652359.php?src=hp_totn)>

\* NASA officials hope to have the gateway ready for human habitation by 2023 and Administrator Jim Bridenstine said he is "thrilled" that Canada agreed to be a partner on the project. "Our new collaboration on the gateway will enable our broader international partnership to get to the moon and eventually to Mars," Bridenstine said in a statement.

4. New York Post: NASA is spending \$42 million to understand space weather <<https://nypost.com/2019/02/28/nasa-is-spending-42-million-to-understand-space-weather/>>

\* In a new blog post, NASA explains that the AWE mission will involve attaching instruments to the exterior of the International Space Station. Once installed, it will be able to closely study a phenomenon called airglow, which NASA describes as “colorful bands of light in Earth’s atmosphere

5. SPACE.com: Curiosity Rover Is Back to Science on Mars <<https://www.space.com/mars-curiosity-rover-returns-to-science.html>>

\* The statement suggests that the rover engineers haven't quite pinpointed what happened but have the information they need to let science work resume. And the rover's science team is raring to go, since Curiosity just drove to a <<https://www.space.com/43150-mars-curiosity-selfie-leaving-vera-rubin-ridge.html>> new area on Mars that features intriguing clay-rich rock

Kristen Eichamer

Deputy Press Secretary

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b6

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**Attachment #1**

**WH Daily Brief 3.1.19.docx**

**Original view**

2 pages (displayed on pages 2492 to 2493)

**NASA Daily Communications Brief**  
**Friday, March 1, 2019**

Contact: Kristen Eichamer, Deputy Press Secretary, [kristen.m.eichamer@nasa.gov](mailto:kristen.m.eichamer@nasa.gov) / (b)(2) and (b)(6)

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**Upcoming Events and Activities**

**March 1**

- Deputy Administrator remarks at The Laboratory for Atmospheric and Space Physics (LASP) Gala at the University of Colorado Bolder to celebrate the 70 year relationship between LASP and NASA. Open to press.
- Press conference with NASA Administrator Jim Bridenstine and astronauts Bob Behnken, Doug Hurley, Victor Glover and Mike Hopkins from 4-4:30 p.m. EST at Kennedy Space Center in Cape Canaveral, Florida.
- NASA Administrator Bridenstine interview with CBS News at 4:30 p.m. EST.

**March 2**

- NASA Administrator attends Commercial Crew SpaceX Demonstration Mission 1 launch from a Falcon 9 rocket at 2:49 a.m. EST from Kennedy Space Center in Cape Canaveral, Florida.
- News briefing with NASA Administrator Bridenstine and Elon Musk, astronauts Behnken and Hurley, NASA launch manager Steve Stich, and others at 3:30 a.m. EST.

**NASA's Top Stories**

**National News Stories**

1. **The Washington Post:** [NASA needs SpaceX to prove it can fly astronauts safely. Saturday's test flight is called a 'crucial step.'](#)
  - "We need to show the American public that when we put an astronaut on a rocket, they'll be safe," NASA Administrator Jim Bridenstine said in an interview late last year.
2. **ABC News:** [SpaceX debuts new crew capsule in crucial test flight](#)
  - This mission is a night owl's dream, with most of the big events happening in the wee hours. Saturday's liftoff is scheduled for 2:49 a.m. to sync up with a space station arrival the next day. Unlike cargo Dragon, plucked from orbit by the station's robot arm and guided to its berth, crew Dragon will dock on its own early Sunday morning.
3. **The Houston Chronicle:** [Canada becomes first international partner on mini-space station orbiting the moon](#)
  - NASA officials hope to have the gateway ready for human habitation by 2023 and Administrator Jim Bridenstine said he is "thrilled" that Canada agreed to be a

partner on the project. “Our new collaboration on the gateway will enable our broader international partnership to get to the moon and eventually to Mars,” Bridenstine said in a statement.

4. **New York Post: [NASA is spending \\$42 million to understand space weather](#)**

- In a new blog post, NASA explains that the AWE mission will involve attaching instruments to the exterior of the International Space Station. Once installed, it will be able to closely study a phenomenon called airglow, which NASA describes as “colorful bands of light in Earth’s atmosphere”

5. **SPACE.com: [Curiosity Rover Is Back to Science on Mars](#)**

- The statement suggests that the rover engineers haven't quite pinpointed what happened but have the information they need to let science work resume. And the rover's science team is raring to go, since Curiosity just drove to a new area on Mars that features intriguing clay-rich rock

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**Framing the Week Ahead - Office of Communications - March 1**

## Framing the Week Ahead Report

For March 2 – March 9, 2019

FOR INTERNAL USE ONLY

This is an important week at

astronauts on American rockets and spacecraft from American soil for the first time since 2011.

centers across the country Monday, March 11, to learn first-hand about our work to return astronauts to the Moon and on to Mars. The event follows the delivery of President Trump's Fiscal Year 2020 budget proposal to the U.S. Congress.

Canadian astronauts on the station talk to students and support the Demo-1 mission.

agency and the success of our mission.

## Administrator's Activities

Jim Bridenstine is attending the SpaceX DM-1 launch on Saturday, March 2. The Administrator spoke with NASA Social attendees and hundreds of media representatives, and look for a special "Watch This Space" episode coming soon!

SpaceX Commercial Crew Flight Test

NASA and SpaceX are targeting 2:49 a.m. EST Saturday, March 2, for the launch of the company's uncrewed Demo-1 flight, the first time a commercially built and operated American rocket and spacecraft designed for humans will launch to the space station. The launch and related activities will air on NASA Television and the agency's <<http://www.nasa.gov/live>> website.

#### International Space Station Downlink Events

\* March 6, Wednesday, 1:25 p.m. – An ISS Education Event is scheduled with the Lowell Observatory in Flagstaff, Arizona, and NASA's Anne McClain.

\* March 7, Thursday, 11:45 a.m. – An ISS In-Flight Event in support of the DM-1 mission is scheduled with David Saint-Jacques of the Canadian Space Agency and NASA's McClain.

Both events will air live on NASA Television and the agency's <<https://nasa.gov/live>> website.

#### Orion Crew Module Uprighting System Tests

This month, testing of the Orion crew module uprighting system (CMUS) is scheduled off the coast of North Carolina on Thursday, March 7- Friday, March 15. The U.S. Coast Guard is providing support to perform the test operations. The CMUS is designed to inflate five bags after the Orion spacecraft and its crew splash down after returning from deep space missions, enabling the capsule to upright itself.

#### METRICS

#LaunchAmerica and #CrewDragon – Looking Forward to SpaceX Demo-1

In the past week, the busiest day in NASA-related news coverage was Feb. 22, the date the Flight Readiness Review was held at Kennedy Space Center and SpaceX's Crew Dragon was given the official "go" for launch on March 2. The most popular NASA-related tweet in the same timeframe was

<<https://twitter.com/SpaceX/status/1101257584797872128>> SpaceX's tweet about the test flight of Crew Dragon, which was retweeted 5,728 times and had over 40K engagements (likes, retweets) - including our @NASA flagship account which retweeted it to our followers. We already find over 700 media hits total and 87 in the top outlets tracked for the first launch of Crew Dragon, with many highlighting information on how to watch live. Headlines characterize the launch as a historic first as well as crucial, with the most recent stories also mentioning the "Ripley" mannequin aboard. In the past two days as our NASA Social for the launch got underway at Kennedy Space Center, we've tracked over 600 social media mentions by the public, with top hashtags #CrewDragon, #NASASocial, and #LaunchAmerica.

#### Insight, What's the Weather on Mars?

Since going live on Feb. 19, there's been continued interest in <<https://mars.nasa.gov/insight/weather/>> daily Mars weather updates from instruments aboard the InSight lander. The mars.nasa.gov page hosting the info has 253K pageviews since launch, most referred by direct links or Google - and it's jumped to the top search result in Google already for the search "Mars weather." The feature was picked up in news coverage from 54 of the top outlets tracked.

#### New Terrain for Curiosity

A recent <<https://www.nasa.gov/image-feature/curiosity-drives-over-a-new-kind-of-terrain>> image from Curiosity's Mastcam was posted as a NASA Image of the Day last week and <[https://www.reddit.com/r/space/comments/avfp6i/nasa\\_curiosity\\_drives\\_over\\_a\\_new\\_kind\\_of\\_terrain/](https://www.reddit.com/r/space/comments/avfp6i/nasa_curiosity_drives_over_a_new_kind_of_terrain/)> shared by a user on Reddit, which generated nearly 340 comments and drove 123K pageviews to the image on NASA.gov - once

again showing the traffic driven by this site, particularly the r/space board.

## FULL SCHEDULE OF ACTIVITIES AND PRODUCTS

Saturday, March 2

### Activities

- \* SpaceX Demo-1 launch, uncrewed test flight (NASA TV coverage begins at 2 a.m. EST)
- \* SpaceX Demo-1 Post-launch News Briefing at 4 p.m. EST on NASA TV
- \* Death Valley Dark Sky Festival Exhibit
- \* Goddard Exhibit: Death Valley Dark Sky Festival in California

### Products

- \* History: Langley Image/Video: LaRC Variable Density Tunnel Move
- \* Humans in Space: Kennedy Blog Post: Commercial Crew Program (CCP) Blog posts, NASA HQ Social Media Activity: launch day activities
- \* Humans in Space: Johnson Blog Post, Image/Video, Media Release, Social Media Activity, NASA HQ Social Media Activity: SpaceX Demo-1 launch, uncrewed test flight
- \* Humans in Space: NASA HQ Social Media Activity: SpaceX Demo-1 Post-launch News Briefing
- \* Humans in Space: Johnson Image/Video: International Space Station overview video.

### Annual Events

- \* Anniversary: Pioneer 10 (1st probe to fly by Jupiter) launch (1972)

Sunday, March 3

### Activities

- \* SpaceX DM-1 Arrival at ISS (3:30 a.m. EST – Rendezvous and docking coverage; 8:45a.m. EST– Hatch opening coverage; 10:30 a.m. EST – Station crew welcoming ceremony)
- \* Death Valley Dark Sky Festival
- \* Goddard Exhibit: Death Valley Dark Sky Festival in California

### Products

- \* History: NASA HQ Social Media Activity: Apollo 9 Anniversary Video
- \* Humans in Space: Johnson Blog Post, Image/Video, Social Media Activity, NASA HQ Social Media Activity: SpaceX DM-1 Arrival at ISS

### Annual Events

- \* Anniversary: 50th Anniversary: Launch of Apollo 9 (1969)
- \* Anniversary: NACA created (1915)

Monday, March 4

## Activities

- \* ISS Downlink: David Saint-Jacques w/Dalhousie University in Halifax, Nova Scotia
- \* Aerospace Safety Advisory Panel (ASAP) meeting
- \* Media Interview: NPR's Big Picture Science Interview at JPL
- \* Interviews: Today Show
- \* Media Visit: Philip Sloss, NASA Spaceflight.com
- \* Media: Plasma magazine interviews Webb project

## Products

- \* Humans in Space: Johnson Blog Post, Image/Video: David Saint-Jacques w/Dalhousie University in Halifax, Nova Scotia
- \* Humans in Space: NASA HQ Media Advisory, Social Media Activity: CRS-11/NG-11 Media Accreditation Advisory
- \* Humans in Space: Johnson Web Article: Commercial Crew Program Conducts First Uncrewed Test Flight
- \* NASA HQ Media Advisory: NASA Moon to Mars Rollout Plans, FY2020 Budget
- \* Solar System and Beyond: Ames Social Media Activity, Web Article, NASA HQ Social Media Activity: Weighing a Galactic Wind
- \* Solar System and Beyond: Web Article: Weighing Galactic Wind [Re-issuing from Ames]
- \* Solar System and Beyond: NASA HQ Social Media Activity: What's Up for March 2019

Tuesday, March 5

## Activities

- \* PAO "Corporate" DM-1 Event for SpaceX
- \* Aerospace Safety Advisory Panel (ASAP) meeting
- \* Media Interview: Voice of America Visits JPL
- \* Kathleen Vander Kadden, ARES scientist, with New Scientist
- \* Drew Feustel for book on Canadian Space Agency Event
- \* Goddard: Amber Straughn on "How The Universe Works" Season 7 episode on Earth 2.0. (This interview also airs at 10 p.m. EST on the Science Channel.)
- \* Media: Plasma magazine interviews Webb project
- \* Today Show at Marshall for International Day of the Woman
- \* Media Interview: Alabama Public TV with Niki Werkheiser
- \* Today Show interview at HQ with Jody Singer

## Products

- \* Goddard Image/Video, Web Article: NASA Continues Evolution for Today's Space Comm
- \* Goddard Other: Amber Straughn featured on Science Channel's How the Universe Works
- \* History, Moon to Mars: Marshall History Web Feature: Transporting the Saturn I 'Wheelin Around'
- \* Moon to Mars: Wallops Social Media Activity, Web Article: NASA Wallops Visitor Center Conducting Apollo Anniversary Youth Art Contest
- \* Moon to Mars: Johnson Image/Video, Social Media Activity, Web Article: On This Day in History Apollo 9 Flight Day 2
- \* Solar System and Beyond: NASA HQ Social Media Activity: Mars in a Box (Tumblr, Snapchat/ Instagram/Facebook story)

## Annual Events

\* Anniversary: Voyager 1 Jupiter flyby (1979)

Wednesday, March 6

## Activities

- \* Aerospace Safety Advisory Panel (ASAP) meeting
- \* DM-1 Farewell Ceremony or PAO Event
- \* ISS Downlink: Anne McClain with Lowell Observatory in Flagstaff, Arizona
- \* Langley researcher interviewed for Shabam! Podcast

## Products

- \* Ames Web Article: BASALT: Designing Future Human Space Exploration on Hawaii's Lava Fields
- \* Earth: Marshall Web Article: SERVIR- Amazonia Hub Selection
- \* Flight: Armstrong Image/Video, Social Media Activity, Web Article, NASA HQ Social Media Activity: AirBos Phase 4 Flight Series
- \* Humans in Space: Johnson Blog Post, Image/Video, Social Media Activity: DM-1 Farewell Ceremony or PAO Event
- \* Humans in Space: Johnson Blog Post, Image/Video, Social Media Activity: Anne McClain with Lowell Observatory in Flagstaff, Arizona
- \* Moon to Mars: Glenn Advisory for Glenn Moon to Mars Rollout Event
- \* Moon to Mars: NASA HQ Web Article: ESD 2019 progress
- \* Moon to Mars: Langley Image/Video, Social Media Activity, NASA HQ Social Media Activity: Small Model, Big Science: Testing an Orion Heatshield Model at Mach 6
- \* Moon to Mars: NASA HQ Image/Video: ISS Multilateral Coordination Board Gateway statement
- \* Moon to Mars: Marshall Image/Video: Image Release: Space Launch System Vehicle Systems Adapter
- \* Solar System and Beyond: NASA HQ Social Media Activity: 10 Year Anniversary of Kepler Launch (Tumblr)
- \* Solar System and Beyond: JPL Web Article: (TBD) InSight Heat Probe Readings
- \* Space Tech: NASA HQ Social Media Activity: Launch of Google Street View of Devon Island
- \* Space Tech: NASA HQ Video: Faces of Technology Video Featuring JPL Optical Communications Engineer

## Annual Events

\* Anniversary: Kepler launch (2009)

Thursday, March 7

## Activities

- \* Aerospace Safety Advisory Panel (ASAP) meeting
- \* Orion Crew Module Uprighting System Tests
- \* SpaceX DM-1 Undocking, Splashdown
- \* ISS Downlink: Anne McClain and David Saint-Jacques for Demo-1 PAO event
- \* JSC Deputy Director Vanessa Wyche at Clear Lake Association of Senior Program/Women in Space Panel
- \* Serena Aunon-Chancellor with George Washington University
- \* Le Figaro Visits JPL

## Products

- \* Earth: Langley Photo Feature: GLOBE Cloud Observation Workshop
- \* Humans in Space: Johnson Blog Post, Image/Video, Media Release, Social Media Activity: SpaceX DM-1 Undocking, Splashdown
- \* Humans in Space: Johnson Blog Post, Image/Video, Social Media Activity: Anne McClain and David Saint-Jacques for Demo-1 PAO event
- \* Humans in Space: NASA HQ Web Article: 2020 X-Hab Challenge feature
- \* Marshall Media Advisory: Local Announcement of Marshall Budget-Roll Out Activities
- \* Moon to Mars: Johnson Image/Video, Social Media Activity, Web Article: Orion Crew Module Uprighting System Tests
- \* Moon to Mars: Marshall Web Article: Web Feature: Julie Bassler, Core Stage Manager
- \* Solar System and Beyond: JPL Web Article, NASA HQ Social Media Activity: Mars 2020 Testing Progress
- \* Solar System and Beyond: Goddard Web Article, NASA HQ Social Media Activity: Hubble and Gaia Team to Measure Milky Way's Mass

## Annual Events

- \* Anniversary: Orbiting Solar Observatory (OSO) 1 Launch (1962)

Friday, March 8

## Activities

- \* SpaceX DM-1 Undocking, Splashdown
- \* Reddit AMA with KSC Engineering Deputy Scott Colloredo
- \* Orion Crew Module Uprighting System Tests
- \* Stan Love at 2019 Astronaut Ellison S. Onizuka Space Science Day
- \* Kjell Lindgren with WDVR-FM's "The World of Work"
- \* Kjell Kindgren with University of Colorado alumni
- \* Awareness: Today Show Interview for International Day of the Woman

## Products

- \* Education: JPL Web Article: Pi Day Challenge
- \* Goddard Social Media Activity: "Women of Webb" Instagram stories profiling women Webb scientists/engineers on International Women's Day
- \* Humans in Space: Johnson Blog Post, Image/Video, Media Release, Social Media Activity: SpaceX DM-1 Undocking, Splashdown
- \* Humans in Space: Johnson Image/Video, Social Media Activity, Web Article: Houston We Have a Podcast "Resident Extreme"
- \* Moon to Mars: Johnson Image/Video, Social Media Activity, Web Article: Orion Crew Module Uprighting System Tests
- \* Moon to Mars: Marshall Image/Video: Rocket Science in 60 Seconds: Mike Roberts
- \* Kennedy Social Media Activity: Reddit AMA with KSC Engineering Deputy Scott Colloredo
- \* Solar System and Beyond: Goddard Image/Video: Hubble Friday image and caption
- \* Solar System and Beyond: Langley Web Article: Europa Clipper High Gain Antenna Undergoes Testing at Langley
- \* Solar System and Beyond: JPL Blog Post (NET) Planet Types blog post
- \* Goddard Social Media Activity: "Women of Webb" Instagram stories profiling women Webb scientists/engineers on International Women's Day

## Annual Events

\* Anniversary: STS-102 (Discovery) launch to ISS (2001)

Saturday, March 9

## Activities

\* Orion Crew Module Uprighting System Tests

\* Stan Love at 2019 Astronaut Ellison S. Onizuka Space Science Day

## Products

\* Moon to Mars: Johnson Image/Video, Social Media Activity, Web Article: Orion Crew Module Uprighting System Tests

## SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #1

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Received: March 2, 2019 1:25:04 AM EST

Today's launch of the SpaceX Falcon 9 and Crew Dragon spacecraft is proceeding on schedule. Crew Dragon is a free-flying spacecraft developed by SpaceX under NASA's Commercial Crew Program. This mission is an un-crewed demonstration flight to the International Space Station (ISS), and is a critical step toward NASA's goal of returning crew launches to U.S. soil. Launch time is currently scheduled for 02:49 a.m. EST. This is the first attempt of a U.S. commercial spacecraft to autonomously rendezvous and dock with the ISS.

The next status will be sent during the Crew Dragon fueling.

The Space Operations Center (SOC) at NASA Headquarters is currently staffed and is monitoring these events.

NASA Headquarters

Space Operations Center (SOC), 7D61

202-358-4456, <<mailto:HQb2, 7E>> .nasa.gov HQb2, 7E .nasa.gov

## SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #2

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From: HQ-Space-Operations-Center <[b2, 7E](#)> nasa.gov>, HQ-Space-Operations-Center </O=NASA/OU=JSC/CN=RECIPIENTS/CN=HQ-SPACEOPSCENTER>

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Sent: March 2, 2019 2:22:38 AM EST  
Received: March 2, 2019 2:22:38 AM EST

SpaceX is currently fueling the vehicle in preparation for launch, which remains planned for 2:49 a.m. EST. The countdown is proceeding nominally.

The next status will be sent at liftoff.

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 1:25 AM  
Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #1

Today's launch of the SpaceX Falcon 9 and Crew Dragon spacecraft is proceeding on schedule. Crew Dragon is a free-flying spacecraft developed by SpaceX under NASA's Commercial Crew Program. This mission is an un-crewed demonstration flight to the International Space Station (ISS), and is a critical step toward NASA's goal of returning crew launches to U.S. soil. Launch time is currently scheduled for 02:49 a.m. EST. This is the first attempt of a U.S. commercial spacecraft to autonomously rendezvous and dock with the ISS.

The next status will be sent during the Crew Dragon fueling.

The Space Operations Center (SOC) at NASA Headquarters is currently staffed and is monitoring these events.

NASA Headquarters

Space Operations Center (SOC), 7D61

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## SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #3

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From: HQ-Space-Operations-Center b2, 7E >, HQ-Space-Operations-Center </O=NASA/OU=JSC/CN=RECIPIENTS/CN=HQ-SPACEOPSCENTER>

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Sent: March 2, 2019 2:49:40 AM EST  
Received: March 2, 2019 2:49:40 AM EST

Liftoff! The Falcon 9 launch vehicle carrying the Crew Dragon spacecraft has lifted off from Launch Complex 39A at 02:49 a.m. EST.

The next status will be sent after orbital insertion.

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 2:23 AM  
Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #2

SpaceX is currently fueling the vehicle in preparation for launch, which remains planned for 2:49 a.m. EST. The countdown is proceeding nominally.

The next status will be sent at liftoff.

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 1:25 AM  
Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #1

Today's launch of the SpaceX Falcon 9 and Crew Dragon spacecraft is proceeding on schedule. Crew Dragon is a free-flying spacecraft developed by SpaceX under NASA's Commercial Crew Program. This mission is an un-crewed demonstration flight to the International Space Station (ISS), and is a critical step toward NASA's goal of returning crew launches to U.S. soil. Launch time is currently scheduled for 02:49 a.m. EST. This is the first attempt of a U.S. commercial spacecraft to autonomously rendezvous and dock with the ISS.

The next status will be sent during the Crew Dragon fueling.

The Space Operations Center (SOC) at NASA Headquarters is currently staffed and is monitoring these events.

NASA Headquarters

Space Operations Center (SOC), 7D61

202-358-4456, <mailto:b6, 7E> b6, 7E



## SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #4 (FINAL)

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, Tu, Eugene L.

(ARC-D) <eugene.l.tu@nasa.gov>, McBride, David (AFRC-100) <david.d.mcbride@nasa.gov>, Kavandi, Janet L. (GRC-A000) <janet.l.kavandi@nasa.gov>, christopher.j.scolese@nasa.gov, Watkins, Michael M (JPL-1000)[Jet Propulsion Laboratory] <michael.m.watkins@jpl.nasa.gov>, Geyer, Mark S. (JSC-AA111) <mark.s.geyer@nasa.gov>, Wyche, Vanessa E. (JSC-AA111) <vanessa.e.wyche@nasa.gov>, Koerner, Stephen A. (JSC-AA111) <stephen.a.koerner@nasa.gov>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) <robert.d.cabana@nasa.gov>, Bowles, David E. (LARC-A) <david.e.bowles@nasa.gov>, Singer, Jody A. (MSFC-DA01) <jody.singer@nasa.gov>, Watkins, Bobby J. (MSFC-HP01) <bobby.j.watkins@nasa.gov>, Gilbrech, Richard J. (SSC-AA00) <richard.j.gilbrech@nasa.gov>, Wrobel, William A. (WFF-8000) <william.a.wrobel@nasa.gov>, Terrier, Douglas A. (JSC-UA000) <douglas.a.terrier@nasa.gov>, Cremins, Tom (HQ-AH000) <tom.cremins-1@nasa.gov>, Zurbuchen, Thomas H. (HQ-DA000) <thomas.h.zurbuchen@nasa.gov>, Martin, Paul K. (HQ-WAH10) <paul.k.martin@nasa.gov>, DeWit, Jeff (HQ-IA000) <jeffrey.j.dewit@nasa.gov>, Covington, Jeanette (HQ-CA000) <jeanette.covington-1@nasa.gov>, Gates, Michele M. (HQ-CA000) <michele.m.gates@nasa.gov>, Neumann, Benjamin J. (HQ-CN000) <benjamin.j.neumann@nasa.gov>, Allen, John R. (HQ-CN000) <john.r.allen@nasa.gov>, Giulietti, Christopher (JSC-AD711) <christopher.giulietti-1@nasa.gov>, Seaward, Desiree F. (HQ-IN010) <desiree.f.seaward@nasa.gov>, Mcmanamen, John P. (WSTF-KA000) <john.p.mcmanamen@nasa.gov>, Smith, Bradley W (KSC-CC000) <bradley.smith@nasa.gov>, Pham, Christine M (ARC-DL) <christine.m.pham@nasa.gov>, Scimemi, Sam (HQ-CJ000) <ssam.scimemi@nasa.gov>, Gatens, Robyn (HQ-CJ000) <robyn.gatens@nasa.gov>, Metrocavage, Kevin M. (HQ-CJ000) <kevin.m.metrocavage@nasa.gov>, Boggs, Kathleen Gallagher (HQ-CJ000) <kathleen.a.gallagher@nasa.gov>, Keaton, Jacob (HQ-CJ000) <jacob.keaton@nasa.gov>, Riley, Andrea M. (HQ-CJ000) <andrea.m.riley@nasa.gov>, Cox, Christie (HQ-CJ000) <christie.l.cox@nasa.gov>, Mcalister, Philip (HQ-CP000) <philip.mcalister@nasa.gov>, Timm, Marc G. (HQ-CP000) <marc.g.timm@nasa.gov>, Pagel, K L. (HQ-CP000) <k.l.pagel@nasa.gov>, Hill, William C. (HQ-CM000) <william.c.hill@nasa.gov>, Whitmeyer, Tom (HQ-CM000) <tom.whitmeyer@nasa.gov>, Smith, Marshall (MSFC-CM000) <marshall.smith@nasa.gov>, Pirtle, Zachary (HQ-IN020) <zpirtle@nasa.gov>, Krezel, Jonathan (HQ-CM000) <jonathan.krezel@nasa.gov>, Kelley, John D. (HQ-CM000) <jkelley@nasa.gov>, Henning, Garth (HQ-IN020) <ghenning@nasa.gov>, Finkel, Timothy A. (JSC-CM000) <timothy.a.finkel@nasa.gov>, Norman, James O. (HQ-CF000) <james.o.norman@nasa.gov>, Hall, Jeanie M. (HQ-CF000) <jeanie.m.hall-1@nasa.gov>, Sweet, Anne (HQ-CF000) <anne.sweet-1@nasa.gov>, Marks, Darwina G. (HQ-CH000) <darwina.g.marks@nasa.gov>, Watson, Joseph (HQ-CH000) <joseph.watson@nasa.gov>, Santana, Magdiel L. (HQ-CH000) <magdiel.l.santana@nasa.gov>, Younes, Badri (HQ-CG000) <badri.younes-1@nasa.gov>, Kundrot, Craig E. (HQ-CR000) <craig.e.kundrot@nasa.gov>, Taylor, Alotta E. (HQ-CI000) <alotta.e.taylor@nasa.gov>, Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Beutel, Allard (HQ-NI000) <allard.beutel@nasa.gov>, heopao@lists.nasa.gov, Mckay, Meredith (HQ-TE000) <meredith.mckay@nasa.gov>, Kuhl, Katelyn M. (HQ-TE000) <katelyn.m.kuhl@nasa.gov>, Parks, Andy (HQ-TE000) <andrew.d.parks@nasa.gov>, Finley, Patrick T (HQ-TE000) <patrick.t.finley@nasa.gov>, Mann, Gregory A (HQ-TE000) <gmann@nasa.gov>, Bowie, Monica T. (HQ-TE000) <mbowie@nasa.gov>, Mitchell, Jonathan A. (HQ-TE000) <jonathan.a.mitchell@nasa.gov>, Hurst, Kimberly A. (HQ-TG000) <kimberly.a.hurst@nasa.gov>, Feldstein, Karen C. (HQ-TA000) <karen.c.feldstein@nasa.gov>, Putter, Philip A (HQ-VA030) <phil.putter@nasa.gov>, Irving, Richard R. (HQ-VA030) <richard.r.irving@nasa.gov>, Kerwin, Mary D. (HQ-IA000) <mary.d.kerwin@nasa.gov>, Bryant, Devin (HQ-VA030) <devin.bryant@nasa.gov>, White, Gilbert (HQ-GC000) <gilbert.white-1@nasa.gov>, Bell, Harold M. (HQ-GA000) <charold.m.bell@nasa.gov>, Healey, Deirdre (HQ-GC000) <dhealey@nasa.gov>, Lombard, Charles E. (HQ-LP020) <charles.e.lombard@nasa.gov>, Williams, Calvin (HQ-LD000) <calvin.williams@nasa.gov>, Smith, Gwyn E. (HQ-QA000) <gwyn.e.smith@nasa.gov>, Burnett, Josephine B. (KSC-UB000) <josephine.b.burnett@nasa.gov>, Woods, Daryl (MSFC-HP20) <daryl.woods@nasa.gov>, Hartman, Daniel W (JSC-OA111) <daniel.w.hartman@nasa.gov>, Montalbano, Joel R. (JSC-OA111) <joel.r.montalbano@nasa.gov>, Shireman, Kirk A. (JSC-OA111) <kirk.a.shireman@nasa.gov>, Todd, Kenneth O. (JSC-OA111) <kenneth.o.todd@nasa.gov>, Rowe, Chad R. (JSC-OK111) <chad.r.rowe@nasa.gov>, Weigel, Dana J. (JSC-OB111) <dana.j.weigel@nasa.gov>, Kshatriya, Amit G. (JSC-

Weigel, Dana J. (JSC-OB111) <[dana.j.weigel@nasa.gov](mailto:dana.j.weigel@nasa.gov)>, Kshatriya, Amit G. (JSC-OB111) <[amit.g.kshatriya@nasa.gov](mailto:amit.g.kshatriya@nasa.gov)>, JSC-IMC <[jsc-imc@mail.nasa.gov](mailto:jsc-imc@mail.nasa.gov)>, Lebeau, Gerald J. (JSC-OC111) <[gerald.j.lebeau@nasa.gov](mailto:gerald.j.lebeau@nasa.gov)>, Prouty, Ryan (JSC-OC111) <[ryan.prouty-1@nasa.gov](mailto:ryan.prouty-1@nasa.gov)>, Thiessen, Mark A. (JSC-OK111) <[mark.a.thiessen@nasa.gov](mailto:mark.a.thiessen@nasa.gov)>, Mellett, Kevin (JSC-OK111) <[kevin.mellett-1@nasa.gov](mailto:kevin.mellett-1@nasa.gov)>, Brogan, Jonathan W. (JSC-OK111) <[jonathan.w.brogan@nasa.gov](mailto:jonathan.w.brogan@nasa.gov)>, JSC-HSG-HOUSTON-SUPPORT-GROUP <[jsc-housupgrp@mail.nasa.gov](mailto:jsc-housupgrp@mail.nasa.gov)>, Feng, Ven C. (JSC-ON111) <[ven.c.feng@nasa.gov](mailto:ven.c.feng@nasa.gov)>, Spetch, William (JSC-ON111) <[william.spetch-1@nasa.gov](mailto:william.spetch-1@nasa.gov)>, Mack, Tricia K. (JSC-OC311) <[tricia.k.mack@nasa.gov](mailto:tricia.k.mack@nasa.gov)>, Kite, Jessica R. (JSC-ON111) <[jessica.kite@nasa.gov](mailto:jessica.kite@nasa.gov)>, Dorth, Gregory (JSC-OX111) <[gregory.dorth-1@nasa.gov](mailto:gregory.dorth-1@nasa.gov)>, Grau, Raphael A. (JSC-OX111) <[raphael.a.grau@nasa.gov](mailto:raphael.a.grau@nasa.gov)>, Mathis, Dylan (JSC-OX111) <[dylan.mathis-1@nasa.gov](mailto:dylan.mathis-1@nasa.gov)>, Engle, Joe H. (JSC-AC)[SAIC] <[joe.h.engle@nasa.gov](mailto:joe.h.engle@nasa.gov)>, Mcbrine, John (JSC-CB611) <[john.mcbrine-1@nasa.gov](mailto:john.mcbrine-1@nasa.gov)>, West, T. Scott (JSC-C105) <[timothy.s.west@nasa.gov](mailto:timothy.s.west@nasa.gov)>, Koerner, Catherine A. (JSC-SA111) <[catherine.a.koerner@nasa.gov](mailto:catherine.a.koerner@nasa.gov)>, Lueders, Kathryn L. (KSC-FA000) <[kathryn.l.lueders@nasa.gov](mailto:kathryn.l.lueders@nasa.gov)>, Stich, J S. (JSC-VA111) <[ej.s.stich@nasa.gov](mailto:ej.s.stich@nasa.gov)>, Reichert, Christine (JSC-CM411) <[christine.m.reichert@nasa.gov](mailto:christine.m.reichert@nasa.gov)>, b6 , b6 b6

Sent: March 2, 2019 3:02:36 AM EST  
Received: March 2, 2019 3:02:36 AM EST

The Crew Dragon spacecraft has separated from the 2nd stage and achieved orbital insertion after a nominal launch and ascent. Prior to NASA giving the go ahead for the spacecraft to dock with the ISS, the Crew Dragon will conduct a number of flight control and communications objectives as well as orbital phasing maneuvers.

Docking with the ISS is currently planned for tomorrow, Sunday, March 3rd at approximately 6:00 a.m. EST.

This is the final update for this event.

NASA Headquarters

Space Operations Center (SOC), 7D61

202-358-4456, <mailto:b2, 7E >b2, 7E

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 2:50 AM  
Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #3

Liftoff! The Falcon 9 launch vehicle carrying the Crew Dragon spacecraft has lifted off from Launch Complex 39A at 02:49 a.m. EST.

The next status will be sent after orbital insertion.

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 2:23 AM  
Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #2

SpaceX is currently fueling the vehicle in preparation for launch, which remains planned for 2:49 a.m. EST. The countdown is proceeding nominally.

The next status will be sent at liftoff.

From: HQ-Space-Operations-Center  
Sent: Saturday, March 02, 2019 1:25 AM

Subject: SpaceX Demonstration Mission 1 (SpX-DM1): Launch Status #1

Today's launch of the SpaceX Falcon 9 and Crew Dragon spacecraft is proceeding on schedule. Crew Dragon is a free-flying spacecraft developed by SpaceX under NASA's Commercial Crew Program. This mission is an un-crewed demonstration flight to the International Space Station (ISS), and is a critical step toward NASA's goal of returning crew launches to U.S. soil. Launch time is currently scheduled for 02:49 a.m. EST. This is the first attempt of a U.S. commercial spacecraft to autonomously rendezvous and dock with the ISS.

The next status will be sent during the Crew Dragon fueling.

The Space Operations Center (SOC) at NASA Headquarters is currently staffed and is monitoring these events.

NASA Headquarters

Space Operations Center (SOC), 7D61

202-358-4456, <mailto:**b2, 7E**> H**b2, 7E**

## Congratulations on a Spectacular Launch and Recovery

---

From: Charles Bolden <b6 [REDACTED]>  
To: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Gwynne Shotwell <Gwynne.Shotwell@spacex.com>, Gerstenmaier, William H. (HQ-CA000) <william.h.gerstenmaier@nasa.gov>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) <robert.d.cabana@nasa.gov>, b6 [REDACTED], Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>, Gerstenmaier, William H. (HQ-CA000) </O=NASA/OU=JSC/cn=Recipients/cn=986226466>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) </O=NASA/OU=EXTernal (FYDIBOHF25SPDLT)/cn=Recipients/cn=f6642e4e81194c34bd4a7260f8ca708a>  
Cc: Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Kathy Manuel b6 [REDACTED] >, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>, Karika, Janet C. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>  
Sent: March 2, 2019 3:12:46 AM EST  
Received: March 2, 2019 3:12:58 AM EST

Jim, Elon, Gwynne, Bill and Bob –

Congratulations on this incredibly successful evening for the NASA-SpaceX Team, for America and the world! It doesn't get much more exciting than viewing a human-rated Crew Dragon spacecraft lift off from LC-39A at the Kennedy Space Center (KSC). It's been a long road to this evening and each of you and the NASA-SpaceX Team should feel an enormous sense of pride at this critical milestone in returning to crew launches from KSC.

Please pass along my heartfelt congratulations to every single member of the NASA and SpaceX families. How I wish I had been able to be with you tonight in person to savor this exceptional accomplishment. Thoughts and prayers go with each of you and all the NASA-SpaceX Team from Jackie and me!

Go Falcon 9! Go Crew Dragon! Go USA!

Charlie and Jackie B.

## Re: Congratulations on a Spectacular Launch and Recovery

---

From: Gwynne Shotwell <b6> >  
To: Charles Bolden <b6>  
Cc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Gerstenmaier, William H. (HQ-CA000) <william.h.gerstenmaier@nasa.gov>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) <robert.d.cabana@nasa.gov>, Elon Musk <b6>, Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Kathy Manuel <b6>, Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>, Gerstenmaier, William H. (HQ-CA000) </O=NASA/OU=JSC/cn=Recipients/cn=986226466>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) </O=NASA/OU=EXTERNAL (FYDIBOHF25SPDLT)/cn=Recipients/cn=f6642e4e81194c34bd4a7260f8ca708a>, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>, Karika, Janet C. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>  
Sent: March 2, 2019 3:30:51 AM EST  
Received: March 2, 2019 3:30:53 AM EST

Thank you, Charlie! So far so good. Still lots to do but we are on our way!

G

Sent from my iPhone

On Mar 2, 2019, at 12:13 AM, Charles Bolden <b6> <b6> wrote:

Jim, Elon, Gwynne, Bill and Bob –

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Go Falcon 9! Go Crew Dragon! Go USA!

Charlie and Jackie B.

## RE: Congratulations on a Spectacular Launch and Recovery

---

From: Gerstenmaier, William H. (HQ-CA000) <william.h.gerstenmaier@nasa.gov>;  
Gerstenmaier, William H. (HQ-CA000)  
</O=NASA/OU=JSC/CN=RECIPIENTS/CN=986226466>  
To: Gwynne Shotwell b6 [REDACTED], Charles Bolden  
b6 [REDACTED]  
Cc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>; Cabana, Robert  
D. {KSC-Center-Director} (KSC-AA000) <robert.d.cabana@nasa.gov>; Elon Musk  
<b6 [REDACTED]>; Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>; Karika,  
Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>; Kathy Manuel  
<b6 [REDACTED]>; Bridenstine, James F. (HQ-AA000)  
</O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP  
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>;  
Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) </O=NASA/OU=EXTERNAL  
(FYDIBOHF25SPDLT)/cn=Recipients/cn=f6642e4e81194c34bd4a7260f8ca708a>;  
Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>;  
Karika, Janet C. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE  
GROUP  
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>  
Sent: March 2, 2019 3:32:59 AM EST  
Received: March 2, 2019 3:33:01 AM EST

Thanks,

Amazing being in firing room 4 for the Falcon 9 launch. Great NASA and SpaceX team work.

billg

From: Gwynne Shotwell b6 [REDACTED]  
Sent: Saturday, March 2, 2019 3:31 AM  
To: Charles Bolden b6 [REDACTED]  
Cc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>; Gerstenmaier, William H. (HQ-CA000)  
<william.h.gerstenmaier@nasa.gov>; Cabana, Robert D. {KSC-Center-Director} (KSC-AA000)  
<robert.d.cabana@nasa.gov>; Elon Musk b6 [REDACTED] Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>;  
Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>; Kathy Manuel b6 [REDACTED]  
Subject: Re: Congratulations on a Spectacular Launch and Recovery

Thank you, Charlie! So far so good. Still lots to do but we are on our way!

G

Sent from my iPhone

On Mar 2, 2019, at 12:13 AM, Charles Bolden b6 [REDACTED] <mailto:b6 [REDACTED]> wrote:

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Go Falcon 9! Go Crew Dragon! Go USA!

Charlie and Jackie B.

## **Re: Congratulations on a Spectacular Launch and Recovery**

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From: Charles F. Bolden Jr. b6  
To: Gwynne Shotwell b6  
Cc: Bridenstine, James F. (HQ-AA000) <james.f.bridenstine@nasa.gov>, Gerstenmaier, William H. (HQ-CA000) <william.h.gerstenmaier@nasa.gov>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) <robert.d.cabana@nasa.gov>, Elon Musk b6, Jacobs, Bob (HQ-NA000) <bob.jacobs@nasa.gov>, Karika, Janet C. (HQ-AH000) <janet.c.karika@nasa.gov>, Kathy Manuel b6, Bridenstine, James F. (HQ-AA000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Bridenstine, James F 8724750558df>, Gerstenmaier, William H. (HQ-CA000) </O=NASA/OU=JSC/cn=Recipients/cn=986226466>, Cabana, Robert D. {KSC-Center-Director} (KSC-AA000) </O=NASA/OU=EXTernal (FYDIBOHF25SPDLT)/cn=Recipients/cn=f6642e4e81194c34bd4a7260f8ca708a>, Jacobs, Bob (HQ-NA000) </O=NASA/OU=JSC/cn=Recipients/cn=747738362>, Karika, Janet C. (HQ-AH000) </O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>  
Sent: March 2, 2019 3:35:14 AM EST  
Received: March 2, 2019 3:35:22 AM EST

Please pass along my congratulations and sincere appreciation to your incredible team for their patience, persistence, hard work and pioneering spirit.

You are so right that there's still lots to do, but this was a giant step on that path tonight.

Thank-you personally for your steady hand at the tiller!

Semper Fi!

Charlie B.

Sent from my iPhone

On Mar 2, 2019, at 03:30, Gwynne Shotwell b6 <mailto:b6> wrote:

Thank you, Charlie! So far so good. Still lots to do but we are on our way!

G

Sent from my iPhone

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Charlie and Jackie B.

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From: Elon Musk b6  
To: Charles F. Bolden Jr. b6 Bridenstine, James F. (HQ-AA000)  
<james.f.bridenstine@nasa.gov>, Cabana, Robert D. {KSC-Center-Director} (KSC-  
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</O=NASA/OU=EXCHANGE ADMINISTRATIVE GROUP  
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=44d180c387394e21b342a65717f4df92>  
Cc: Gwynne Shotwell b6  
Sent: March 2, 2019 5:15:41 AM EST  
Received: March 2, 2019 5:15:45 AM EST

Thanks! Super appreciate NASA faith in SpaceX. It is an honor to support the space program.

And YAY!!

On Mar 2, 2019, at 3:36 AM, Charles F. Bolden Jr. b6 <mailto:b6> wrote:

Please pass along my congratulations and sincere appreciation to your incredible team for their patience, persistence, hard work and pioneering spirit.

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On Mar 2, 2019, at 12:13 AM, Charles Bolden b6 <mailto:b6> > wrote:

Jim, Elon, Gwynne, Bill and Bob –

Congratulations on this incredibly successful evening for the NASA-SpaceX Team, for America and the world! It doesn't get much more exciting than viewing a human-rated Crew Dragon spacecraft lift off from LC-39A at the Kennedy Space Center (KSC). It's been a long road to this evening and each of you and the NASA-SpaceX Team should feel an enormous sense of pride at this critical milestone in returning to crew launches from KSC.

Please pass along my heartfelt congratulations to every single member of the NASA and SpaceX families. How I wish I had been able to be with you tonight in person to savor this exceptional accomplishment. Thoughts and prayers go with each of you and all the NASA-SpaceX Team from Jackie and me!

Go Falcon 9! Go Crew Dragon! Go USA!

Charlie and Jackie B.

## SpaceX Demonstration Mission 1 (SpX-DM1): Docking Status #1

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From: HQ-Space-Operations-Center <[b2, 7E](#)>, HQ-Space-Operations-Center </O=NASA/OU=JSC/CN=RECIPIENTS/CN=HQ-SPACEOPSCENTER>

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The Crew Dragon spacecraft is on schedule for docking this morning at approximately 6:00 a.m. EST. Since its launch on March 2nd, the Crew Dragon successfully passed a series of flight demonstrations and is performing a number of phasing maneuvers prior to its arrival at the International Space Station (ISS).

The Space Operations Center (SOC) at NASA Headquarters is currently staffed and is monitoring these events.

NASA Headquarters

Space Operations Center (SOC), 7D61

202-358-4456, <mailto:

(b)(2) and (b)(7)(E)>

(b)(2) and (b)(7)(E)

## OCE Weekly for the Period Ending 1 March 2018

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Attachments: OCE Weekly 1 March 2019.docx

NASA Leadership Team – Agency engineering highlights and issues for the week.

General

1. Space Environments Seminar: Internal Charging of the Van Allen Probes - Dr. Andrew Gerrard of the New Jersey Institute of Technology (NJIT) will present "Interior Spacecraft Charging of the Van Allen Probes" at the Space Environments Virtual Seminar on March 5, 2019, at 3 p.m. Eastern. Dr. Gerrard is a professor in the Department of Physics and Director of the NJIT Center for Solar-Terrestrial Research. The two Van Allen Probes spacecraft carried Environmental Radiation Monitor (ERM) instruments for measuring internal charging currents behind two different levels of shielding and radiation dose from a set of RadFet dosimeters. This presentation will summarize the ERM instrumentation and discuss how they are used to characterize internal charging due to energetic electrons along geostationary transfer orbits within the Earth's radiation belts. Parties interested in participating who are not already on the Space Environments Virtual Seminar distribution list can contact Dr. Minow ([joseph.minow@nasa.gov](mailto:joseph.minow@nasa.gov)) for WebEx/dial-in information. Presentation charts and an audio recording of the seminar will be archived at the Space Environments and Radiation Community of Practice site (<https://nen.nasa.gov/web/sr>) that is hosted by the Space Environments Technical Discipline Team. (Minow, 256-544-2850)

## 1. Human Space Flight and Exploration

### Upcoming Events:

SpaceX Demo-1 – 3/2/19

Soyuz 58S – 3/14

Progress 72P – 4/4

NG-11 – 4/17

SpaceX -17 - 4/25 (NET)

AA-2 – 4/27/19

1. On-orbit replacement of Fan Pump Separator brings space suit back in-service - The EMU Team supported the removal and replacement of the Fan/Pump/Separator (FPS) on-orbit within Extravehicular Mobility Unit (EMU) 3006. After the hardware failure was identified on January 22, the team quickly developed a fault tree and recovery plan. With approval from the ISS Program, the crew was able to accomplish the removal and replacement of the FPS with a spare unit that was already on-orbit. Following the hardware replacement, the team ran the necessary Return to Service testing, including leak checks of the newly installed FPS. Forward work for the EMU Team includes a detailed data review with the larger community next week. EMU 3006 will be used as a back-up EMU for upcoming EVA's in March and April. The failed FPS will return on SpaceX Demo-1, and the EMU Team will perform Test, Teardown, and Evaluation (TT&E) to determine root cause of the failure.

2. Orion EM-1 Sun Sensors complete functional testing - Aeroscience and Flight Mechanics engineers recently performed functional testing of sensors used to determine Orion spacecraft's attitude for EM1 at KSC's Operations and Checkout building. Eight Sun Sensors and two Star Trackers were stimulated using variable LEDs and simulated star fields, with each sensor's output checked to confirm requirements were properly met. During testing, a possible configuration issue with one of the Optical Sky Simulators prevented full completion of the Star Tracker functional, but both Star Trackers performed as expected. All the Orion Sun Sensors performed within specifications ensuring full completion of the Sun Sensor functional.

3. ESTA assembles Orion AA-2 "SuperBrick" battery: vibration testing successful - The Orion Ascent Abort-2 Test (AA-2) SuperBrick SN002 has been successfully assembled and vibration tested by Propulsion and Power personnel at the Energy Systems Test Area (ESTA). The AA-2 SuperBrick is a battery that will be used in AA-2 as a power source for the Crew Module Separation Ring Power Distribution Unit. The SuperBrick fabrication effort included connector

fabrication, insulation pad install, battery mounting, fuse and fuse hardware assembly, resistance temperature device (RTD) application, sense line tab welding, internal wiring connections, panel construction, and battery cycling for discharge capacity verification. After assembly completion, acceptance level vibration testing was performed at ESTA. The SuperBrick will undergo functional thermal testing in March 2019.

4. Orion Crew Module Well Deck Recovery Conditions Dynamics Analysis - The NESC provided ship response and wave dynamics expertise to the Exploration Ground Systems program and transitioned a Heading Advisory Tool to the NASA Landing and Recovery Team. Recovery ship response and wave dynamics expertise was requested in support of Orion Crew Module (CM) landing and recovery operations. Support requested included developing and verifying a Reduced Order Model (ROM) of the dynamic behavior of the U.S. Navy landing platformdock (LPD) vessel and performing dynamic analysis of ship well deck conditions for CM recovery. The assessment team developed a Heading Advisory Tool (HAT) that gathers wave measurements from radar or buoys and provides optimal recovery ship heading and speed to minimize transverse wave motion inside the well deck. The HAT was successfully tested during Underway Recovery Test (URT)-6 and baselined as part of the recovery process for URT7. The HAT and user's documentation have been transitioned to the NASA Landing and Recovery Team. (VanZweiten, 321-867-6141)

5. Launch Abort System (LAS) Development Status - This week the Michoud Assembly Facility (MAF) team completed final AA-2 ogive modifications. On Tuesday the MAF team, working in the Operations and Checkout (O&C) at KSC completed the modifications to the LAS T0 area on the 180° ogive panel. Also, the team plans to ship the 270° panel to the Launch Abort System Facility (LASF) on March 4. Last week the Attitude Control Motor (ACM) team in Elkton Maryland completed forward closure testing of the QM-1 motor. This week the team was working final motor assembly and expects to complete assembly next week. The Lockheed-Martin (LM) team at the O&C completed re-work of the AA-2 nosecone click-bonds. Nosecone integration is planned for completion before turning the LAS vertical late next week. This week the LASO and Flight Test Management Office (FTMO) team, with LM support was working AA-2 CM-LAS integrated avionics testing with plans to complete by late this week. The test suite includes four reference frame or "Phasing" tests as well as fail-over (aka solo-mode) and nominal count-down/count-up tests. On February 26, the LASO with the support of the entire AA-2 team, NASA and LM, successfully completed the AA-2 LAS System Acceptance Review (SAR). With only 3 months until the AA-2 launch the LASO technical leads described some of their top concerns. From Structures: The Vibro-Acoustic (VA) environment is a top concern and specifically for the fairing assembly. The team was unable to test to the predicted levels, and the reduced FoS (from 1.4 to 1.25 in some areas) has increased risk. However, the team feels OK to fly because the VA environment that was designed to is conservative. From the Chief Engineers Office: Interfaces are always a top concern including interfaces across the vehicle. There is also concern about the potential for latent defects within the ACM controller, defects that are discovered during flight and exposed by the harsh abort environment. Testing and inspections, including harness inspections by the chief engineers and Quality Assurance (QA), mitigate, to some extent these interface concerns. Controller concerns are mitigated, but of course not completely, by the thermal vacuum and vibration testing that have completed on the AA-2 unit and by the planned ACM QM-1 hot fire test. Propulsion: Assuming a successful ACM QM-1 hot fire test the Propulsion team's top concerns include Valve Control System (VCS) performance issues that persist, issues not detected or manifested in the single hot fire test that will be complete before the AA-2 launch. The QM-1 test substantially mitigates concerns, but not completely, other testing such as forward closure testing, loaded valve testing and LAS-CSR (Crew Module and Separation Ring) integrated testing at the cape also serve to mitigate the concern. The Lead Systems Engineer office: There is a risk that some components were over tested as a result of the very conservative loads environment. Any over testing would result in removing increased life from a box or component, placing the mission at added risk.

6. SPACE LAUNCH SYSTEM (SLS) core stage production SUPPORT (Leopard/Van Hooser/Lyles/Blevins/Adams): The SLS Chief Engineer's Office investigated a suspicion that more design engineering support is required to support production and design enhancements to speed production. A one-page summary of the red flags, indicators, and evidence that led to the suspicion was prepared and coordinated with the Stages Deputy Manager at the Michoud Assembly Facility prior to sending to Boeing Management. A meeting will be scheduled to discuss the concerns and determine what corrective action is required.

7. SPACE LAUNCH SYSTEM (SLS) exploration mission Motor Segment Processing (Leopard/Van Hooser/Lyles/Blevins/Wood/Bevill): The Flight Support Booster-1 (FSB-1) center forward (C/F) segment lining is complete and flash thermography is in progress. The segment will be shipped to the mix/cast area the week of 2/25/19 in preparation for propellant cast on 3/4/19. The FSB-1 center aft (C/A) segment insulated level x-ray was completed with no defects detected. The Exploration Mission-2 center/aft (EM-2 C/A) left hand and right hand segments have completed processing in motor finishing and are ready for shipment to storage, pending storage deck availability and closure of open paper. A total of four EM-2 segments are now complete.

8. RS-25 Engine, NASA, Test Phase, SSC A1 Test Stand -Test 901-1038 was conducted for a full duration of 510 seconds on 2/28/19. Engine 0525 will be removed and flight engine 2062 will then be installed for test on 4/4/19.

## 2. Science/NOAA

### Upcoming Launches

TBD ICON

3/12/19 - Daw: EUNIS Sounding Rocket @ White Sands Missile Range (Solar)

4/2019 (NET) - Space Environment Testbed (SET-1) Launch on Demonstration and Science Experiments (DSX) spacecraft

4/1/19 - McKenzie: CLASP-2 Sounding Rocket @ WSMR (Solar)

4/8/19 - Harris: SHIELDS Sounding Rocket @ WSMR (Solar)

1. Euclid: Six Sensor Chip Electronics (SCE) modules have successfully completed the SCE flight acceptance test and four will now progress to the Sensor Chip Subsystem (SCS) Flight Acceptance testing. The other two will combined with two additional SCEs once they complete testing in a few weeks. Two more SCEs were delivered to the Detector Characterization Lab on February 26, 2019 and will commence the initial flight Acceptance testing. Four SCEs have completed the Flight Acceptance testing in the SCS configuration. The final reports have been sent to Jet Propulsion Laboratory (JPL). One of the four had a noisy channel and will likely be held back from delivery to European Space Agency (ESA). (Terence Doiron/550)

2. GEDI (Global Ecosystem Dynamics Investigation Lidar): The GEDI Pointing Control System (PCS) team successfully completed the final phase of PCS checkout. This involved the primary Science Mode, called TRACK, whereby GEDI is pointed at targets selected by the science team. The observed motion agrees extremely well with high fidelity simulation predictions. Additionally, the science team is reporting that the pointing accuracy was well within requirements with approximately 100% margin. Additional improvement will be achieved after calibrations are completed. (Michael Nemesure/591)

3. JWST (James Webb Space Telescope) Mission Systems Engineer: The Spacecraft Element thermal-vacuum test Readiness Review was held February 26, 2019. (Mike Davis/599). Mechanical Systems personnel completed an analysis of the Deployment Tower Assembly to Isolator Assembly and Star Tracker Support Assembly (STSA) Integration and presented the results at a Mechanical Working Group meeting. No new shims at the STSA field joint are needed and no change to the internal DTA snubbers are needed. A recommendation to remove/replace the Spacecraft snubber bushing and re-center it is under consideration. Work continues on the Observatory Test Bed Vehicle Dynamics Simulator issue where there was an inability to consistently enter TRACK mode consistently during a Wave Front Rehearsal Test. The timing latency continues to be investigated and we remain at the point of understanding 2.5 of the 4.0 minor cycle latency. The Integrated Science Instrument Module team is reviewing results

of troubleshooting tests (i.e. pattern test, Fine Steering Mirror step command test). Updated parameters also appear to have helped the latency by about 1 minor cycle. Mission Systems personnel supported the Contingency Battery Preliminary Design Review held a couple weeks ago. (Kathleen Jenkins/599). NASA received approval from the State Department for a license authorizing export of "technical data and limited defense services" to understand, mitigate and if necessary correct potential residual pressure issues associated with the Ariane 5 payload fairing for JWST launch. This was requested to allow JWST to work with Arianespace to ensure that the fairing pressure at the moment of fairing separation is low enough that any instantaneous release of this pressure will not overload the sunshield membranes, which may retain slight pressures from ascent. Having this license will allow JWST to share test data, review designs and analyses with the launch supplier, and if necessary provide expertise where needed to help solve the problem. (Jon Lawrence/543)

4. L-9/TIRS-2 (Thermal Infrared Sensor-2): TIRS-2 is in the Hot Operational testing phase of their first thermal vacuum test, and everything has been going well to date. (Carmel Conaty/592). Mechanical System: The TIRS-2 team continues to support instrument thermal vacuum testing. Preparations are well underway for the upcoming vibration and vibroacoustic instrument tests. The team will also be supporting a technical interface meeting at the spacecraft vendor's facility this week. (Danielle Vigneau/543, Sharon Cooper/540)

5. LISA (Laser Interferometer Space Antenna): A Telescope Peer Review was held on 2/20/19 where the telescope envelope and mechanical interface was presented. This review was geared to the development of the procurement specification. The review was supported by ESA colleagues. The Goddard optomechanical team is awaiting feedback. (Michael Hersh/544, Corina Koca/544)

6. Lucy/L'Ralph: Javier Del Hoyo/551 successfully deposited a near-ultraviolet enhanced protected silver coating. The theoretical spectral reflectance showed excellent agreement to the experimentally measured reflectance. He also worked on the statement of work for the L'Ralph dichroic beam splitter. (Javier Del Hoyo/551). SE Management: The Lucy team welcomes Colby Goodloe as the project spacecraft systems engineer. All project systems staffing is now in place for Phase C. Provided project systems recommendations to the Lockheed Martin team for proceeding with the Moli M battery as well as specific items for consideration. Mission Preliminary Design Review Request for Actions are progressing on schedule. GOLD rule waivers are in various stages but are being worked. (Jessica Thompson/599, Kathleen Jenkins/599)

7. PACE (Pre Aerosol Clouds and ocean Ecosystem): The mechanisms team is currently analyzing; testing; and compiling information on previous tests to characterize many aspects of the design. Additionally, the Ocean Color Instrument - tilt mechanism interface changes have been finalized allowing the team to proceed with a combined system stiffness analyses; further develop the design of the Tilt System structure; and the fabrication of Ground Support Equipment hardware to simulate assembly configurations. Work on the mechanism Engineering Model boards is continuing while Flight parts are in procurement. (Chuck Monroe/544, Corina Koca/544)

8. WFIRST (Wide-Field Infrared Survey Telescope): Payload Systems Engineering continues to support Mission in Phase B planning and execution of Phase B trades, liens, documentation, Integration & Test planning and interface development. Coordinating with Mission Systems Engineer on development of Mission-level Technical Baseline Configuration tracker to support baseline freeze for Mission Preliminary Design Review by end of March 2019. Dark Mirror samples have been prepared and being packaged to send to Harris for testing. Optical Verification Peer Review planning is underway, dates are tentatively during June 2019. (Jody Davis/592, Alice Liu/592, Carmel Conaty/592)

9. Mars Entry, Descent, & Landing Instrument (MEDLI2) Development Progress - The LaRC-led MEDLI-2 project provides heat-shield sensors to acquire atmospheric entry data on the Mars 2020 mission. Repairs to the flight spare Sensor Support Electronics (SSE) due to a blown fuse issue have been completed. Repeat of the final testing of the flight spare SSE is progressing well and should be completed this week. Dry Heat Microbial Reduction (DHMR) of the second Backshell Pressure Transducer is underway and should be complete next week. Final calibration of the heat flux sensors and radiometers was completed. Two of the heat flux sensors are providing anomalous readings. A

Material Review Board concluded that they should not be designated as flight nor flight spares. Because this would result in no flight spare heat flux sensors, the project is developing the plan to perform environmental testing on a few other heat flux sensors to ensure sufficient flight spares are available. Work is progressing on backup plans in case the existing Crane DC-DC converters cannot be replaced as currently planned.

10. Europa Clipper: The Planetary Protection (PP) Plan and PP workshop Memorandum of Understanding (MOU) are in signature at headquarters; that plan, based on the Probabilistic Risk Analysis-demonstrated and community-vetted insensitivity to initial bioburden, would provide significant relief on needed cleanroom level and the amount of hardware for which Dry Heat Microbial Reduction (DHMR) is required.

UVS (Ultraviolet Spectrograph) iCDR (Instrument CDR) is scheduled for 03/12-14/19 at SwRI.

SUDA (SUrface Dust Mass Analyzer) iCDR is scheduled for 03/20-22/19 at CU/LASP.

The SLS (Space Launch System) Europa Phase 1 Safety Review has been rescheduled for 3/26-27/19 at MSFC. Project PDR is scheduled for the 06/18-20/19 at JPL.

ICEMAG (Interior Characterization of Europa Using Magnetometry) Instrument: ICEMAG held an FPGA peer review that went well. ICEMAG CDR is scheduled 7/29-30/19.

MISE (Mapping Imaging Spectrometer for Europa) Instrument: MISE CDR scheduled 5/21-23/19.

11. REASON (Radar for Europa Assessment and Sounding: Ocean to Near-surface) Instrument: On 02/28/19 a Technical Interchange Meeting was held with Airbus, Flight System (APL and JPL), Integrated Product Team and REASON to review requirement modifications to be put on contract following the Integrated Wing Review and Solar Array PDR held at the end of January. There was a data review for the MCJ205A20V05V flexible coax cable's qualification campaign on Feb. 22. The only open issue is understanding the source of some discoloring on one of the connectors. The next step for the coax cables is ESD testing. At the Solar Array delta-PDR/Integrated Wing Review, the Airbus team presented a Titanium additive layer manufacturing (ALM) interface bracket to hold the REASON antennas. REASON Electronics CDR is scheduled for 4/24-25/19 but is likely to slip into May. REASON Antennas CDR scheduled 11/13/19.

12. MAIA (Multi-Angle Imager for Aerosols): MAIA can report that we held a successful Calibration CDR. There were no significant findings. MAIA can report that we selected our preferred 3 flight units from 9 articles tested. Two additional units are being saved as a contingency. The 3 selected units meet MAIA's key requirements. 2 or 3 of the other units will be used for qualification testing starting with Total Ionizing Dose (TID) testing starting tomorrow. MAIA will have a Harness Detailed Design Review on the 28th, A detailed design review for the biaxial gimbal on the 6th and 7th, an I&T and V&V review on the 8th, a peer review of the SDS (Science Data System) on the 8th, The Host SRR at General Atomics on the 12th and 13th as part of the lead up to the project CDR still nominally scheduled for April 25th.

13. Mars 2020:

Next Major Milestones:

March 7 C4.0.1 (cruise software build delivery to ATLO) SRCR #2.

April 15 CEDL V&V Completion Workshop.

June 5 S5.1 (surface software delivery to ATLO) SRCR.

August 1 S5.2 SRCR, C4.1 SRCR, SECC (Second Chance EDL) 4.1 SRCR.

August 1 System Test #3 (Launch-EDL, SOX, Surface).

September STT (System Thermal Test), Rover.

November System Test #5 (L-EDL, SOX, Surface).

December 15 Pre-Ship Review for Cruise Stage, Descent Stage.

HRCRs:

Sacrificial Cables (Non-fight Surrogate cabling for pyro testing) HRCR was completed on 2/21

Rover Internal Flex HRCR was completed on 2/27

ATLO:

MMRTG Trail Blazer activity at CCAFS/KSC was completed successfully.

Thermocouples, accelerometers and thermal blanketing installation continued on the Cruise and Descent stages in advance of the stacking of these stages for the Launch/Cruise environmental testing in April.

V&V: On the Mission System Test Bed, testing included Fault Protection, Comm Behavior Basic Functional, EDL Actuators, VCE PFR Debug, EDL Timeline, Rover Shunt Current Telemetry Monitor Investigation and FSW Dev. On FSW Test Bed, testing included RSM Relay Box checkout with an A500 motor, Mobility, Robotic Arm, Supercam, Helicopter base station EIP, Motor Control Rest Recovery, MEDA Surface Checkouts and DPFR retest for Supercam and RIMFAX. The RMCA MCFSR cards were removed on Monday to have rework performed. On AVS Test Bed, SHERLOC integration completion, SHERLOC Nominal Checkout, Avionics, Surface ACM Matrix testing and Fault Protection PFR Investigation.

14. JWST MIRI (The Mid-Infrared Instrument) of JWST:NGAS and MIRI I&T Teams continued preparations for the Spacecraft Element (SCE) TVAC testing slated for late March 2019. The MIRI Focal Plane System (FPS) test lab (@JPL B79) is preparing for the next characterization test run for April-June. JPL/MIRI, STScI (Space Telescope Science Institute) and GSFC personnel continue the development of the MIRI Cooler's JT (Joule-Thomson) compressor assisted anneal process as a baseline strategy change due to the much higher frequency of anneals expected during flight operations and the necessity to make the process an on-board script as opposed to real time commanding. The MIRI Operations Concept Document has been distributed for review by MIRI JPL, MIRI European Consortium and Space Telescope Science Institute (STScI) engineers and scientists. This MIRI Operations Concept Document will be used in the generation of the JWST Mission Operation Concept Document. Milestones: TVAC start (chamber door closure now scheduled for March 29, 2019).

15. NISAR (NASR-ISRO SAR Mission): A System Integration & Test (SIT)1/SIT2 Integration and Test Readiness Review was held with a board of JPL subject matter experts and Standing Review Board members. Staffing and late deliveries were identified as risks. Good progress continued on L-SAR flight assemblies. The first fully assembled L-band Transmit/ Receive Module (TRM) and the first Quad First Stage Processor (QFSP) completed random vibration tests with no issues. The RF Back-End started a four week thermal performance test on both H and V channels. The Boom upper and lower mast assemblies completed thermal conditioning at Northrup-Grumman Innovation Systems (NGIS). These composite structures are the fully bonded flight units and are now in post-thermal cycle inspection. The masts will next be static proof tested beginning late next week. A test readiness review was completed for the static and thermo-elastic testing. The boom is on schedule for a June delivery to JPL. The first set of flight harnesses was delivered to JPL. Harness deliveries will continue into April in support of early SIT1 integration activities. Heaters,

thermostats, and thermal sensor installations were completed on the Radar Instrument Structure panels. Panels are now ready for harness installations.NISAR Science supported an Indian Space Research Organisation (ISRO)-NASA meeting for a possible ISRO L-band/S-band airborne Synthetic Aperture Radar (SAR) campaign in the US. Topics included the site, observation strategy, NASA aircraft-ISRO instrument integration timeline, roles and responsibilities. The campaign will generate a unique L and S-band data set for science investigations and NISAR-related joint algorithm development. A follow-up meeting, planned for March 25-29 at JPL & Armstrong, may be delayed if ISRO personnel cannot get US visas in time.

#### Upcoming Major Activities and Events:

Date

Project

Meeting or Event

Location

02/28/19

NISAR

Pre-CDR Verification & Validation (V&V) Review Follow-Up Meeting

JPL

04/10-12/19

NISAR

Focused Technical Meeting (FTM). Topics: BDH ICD Finalization & OBC-PDS Interface Test

ISRO/URSC (Bangalore)

16. OCO-3 (Orbiting Carbon Observatory 3):OCO-3 successfully completed the KDP-E this week at Headquarters. The project is approved to move forward with final launch processing activities and In Orbit Checkout (IOC). Transition to Phase E will take place after the Post-Launch Assessment Review (PLAR), which is scheduled to take place at the end of IOC.OCO-3 to Dragon integration activities have been officially scheduled with SpaceX. Logistics are expected to be finalized with SpaceX and KSC via telecon on Feb 28th. OCO-3 will be moved from the Space Station Processing Facility (SSPF) to Dragonland on March 18th. OCO-3 integration with the Dragon trunk is expected to complete on March 20th.

#### Upcoming milestones:

Dragon integration activities start: March 18th.

Launch: N.E.T. April 25th.

17. Psyche: Held a tabletop review with key members of the Cold Gas PDR review board to address issues identified at the Cold Gas propulsion PDR (recall that it was a partial pass). That review concluded with unanimous acceptance of the revised Cold Gas Subsystem design. The revised system meets all project requirements and is the baseline for our upcoming flight system/project PDR.Successfully completed the second part of the pre-PDR V&V review.Successfully completed the Mission design and Navigation pre-PDR peer review.Successfully complete the

Deep Space Optical Communication (DSOC) Accommodation Kit (DAK) PDR. The primary concerns raised by the review board in that review were related to schedule pressure. Next project major review milestone: Flight System and Project PDR 3/11-3/14.

18. RIME (Radar for Icy Moons Exploration): RIME Transmitter and Matching Network are undergoing project replanning activities to accommodate in house work. RF will be developed in house, Power Supply will be developed under contract. For receiver, due to parts issue, looking at removing front-end switch. Performing tests to verify if switch is required to meet instrument performance requirements.

Project milestones:

2019-03-29 – delivery of engineering model to Italy.

2019-04-01 – new Transmitter interface review.

2019-06-28- Flight receiver delivery.

TBD – Transmitter / Matching Network delivery.

19. SWOT (Surface Water & Ocean Topography): The KaRIn antenna deployment mechanisms completed Non-Op thermal testing. The KaRIn Digital Electrons Subsystem (KDES) Thermal Control Subsystem (TCS) completed ambient thermal testing. The Extended Interaction Klystron (EIK) started TVAC testing this week. The KDES is completing its thermal-ambient testing this week. Successful HRCRs were held for the Nadir Module primary structure and KaRIn harness. Next major milestone: Payload SIR 2/5/2020 (Lead into PL I&T at JPL); LRR is 9/24/2021.

20. WFIRST/CGI (Coronagraph Instrument): Held a detailed design review of the deformable mirror (DM) driver electronics ASIC backup design with Silicon Artists. All actions from previous design reviews were addressed. Coronagraph testing: (1) continued starlight suppression experiments with shaped pupil masks and the Prototype Imaging Spectrograph for Coronagraphic Exoplanet Studies (PISCES) prototype spectrograph. Opened vacuum chamber to fix focus error in the spectrograph optical path, (2) making new Hybrid Lyot masks for Phase B telescope pupil in JPL's Micro Devices Laboratory (MDL), (3) refining a test plan for verifying, with the (Hybrid Lyot Coronagraph (HLC) mask, the number of iterations need to get to the required contrast level. Held a Table Top Peer Review for CGI Focus Control and Fast Steering Mirror Mechanisms. Good feedback from the board on design details. Concerns were raised on several known issues (lack of life testing, need to test mechanism with electronics prior to delivery). Will host a follow-up discussion on Level 6 requirements and V&V plans. Laboratoire d'Astrophysique de Marseille (LAM) has appointed an experienced project manager and a quality assurance engineer for their contribution of off-axis parabolas (OAPs) to CGI, started to polish prototype OAP #7. CGI Mission Assurance Manager plans to visit LAM in April to meet with their QA and discuss their quality plans. WFIRST CGI is working toward the instrument PDR planned for August 27-29, 2019.

### 3. Aeronautics

1. Unmanned Aircraft Systems (UAS) Integration in the National Airspace Systems (NAS) Flight Test 6 (FT6) Critical Design Review - The critical design review for the NASA UAS Integration in the NAS Project FT6 was conducted at AFRC on February 21. FT6 is the final flight test event in the UAS in the NAS project and will investigate technologies related to Low Size, Weight, Power and Cost (Low C-SWAP) UAS operations. The flight test objectives include characterizing the performance of a Low C-SWAP radar, validating the Low C-SWAP Detect and Avoid (DAA) Well-Clear and Alerting definition, and evaluating total human-system performance through a full mission simulation of UAS operations in the NAS with subject pilots controlling the UAS. FT6 will utilize a Low C-SWAP airborne surveillance RADAR developed by Honeywell mounted on a Navmar Applied Sciences Corporation (NASC) Tigershark aircraft flying DAA encounters with live aircraft. The results of FT6 will inform the RTCA Special Committee 228 Minimum

Operational Performance Standards (MOPS) for Low C-SWAP UAS DAA systems. LaRC provides the FT6 Principal Investigator for the Detect and Avoid team and also developed the Detect and Avoid algorithm (DAIDALUS) that will be used in the test.

#### 4. Technology

1. Z-2.5 Space suit begins Neutral Buoyancy Lab test series - The Exploration Extravehicular Mobility Unit (xEMU) Pressure Garment System (PGS) Team, in collaboration with the Neutral Buoyancy Lab (NBL), successfully conducted the first crewed run of the Z-2.5 space suit in the NBL. The xEMU Project is tasked to build a demonstration unit of the xEMU space suit to test on the International Space Station (ISS) by 2023. This suit will be called xEMU Demonstration Suit, also known as the xEMU Demo. The Z-2.5 space suit is a prototype of the xEMU Demo. The NBL test series will focus on evaluating the microgravity performance of the Z-2.5 suit and its ability to complete ISS-related tasks. The test series will continue with evaluations from three additional crew members to help characterize the microgravity performance of the Z-2.5 space suit.

2. Robonaut passes Electromagnetic Interference testing - Avionic Systems Division (ASD) personnel completed a 5-day series of Electromagnetic Interference (EMI) certification tests in the Building 14 semi-anechoic chamber on February 25. This testing is in support of Robonaut reflight efforts. All data was found to be in family with previous certification efforts. Additionally, the EMI team evaluated methods to provide additional electromagnetic shielding over the torso of the Robonaut in order to reduce electromagnetic emissions. Ultimately, the use of a soft conductive cloth proved the most effective. Plans to return Robonaut to ISS are currently in-work.

**Attachment #1**

**OCE Weekly 1 March 2019.docx**

**Original view**

12 pages (displayed on pages 16237 to 16248)

**NASA Leadership Team** – Agency engineering highlights and issues for the week.

## General

- a. **Space Environments Seminar: Internal Charging of the Van Allen Probes** - Dr. Andrew Gerrard of the New Jersey Institute of Technology (NJIT) will present "*Interior Spacecraft Charging of the Van Allen Probes*" at the Space Environments Virtual Seminar on March 5, 2019, at 3 p.m. Eastern. Dr. Gerrard is a professor in the Department of Physics and Director of the NJIT Center for Solar-Terrestrial Research. The two Van Allen Probes spacecraft carried Environmental Radiation Monitor (ERM) instruments for measuring internal charging currents behind two different levels of shielding and radiation dose from a set of RadFet dosimeters. This presentation will summarize the ERM instrumentation and discuss how they are used to characterize internal charging due to energetic electrons along geostationary transfer orbits within the Earth's radiation belts. Parties interested in participating who are not already on the Space Environments Virtual Seminar distribution list can contact Dr. Minow ([joseph.minow@nasa.gov](mailto:joseph.minow@nasa.gov)) for WebEx/dial-in information. Presentation charts and an audio recording of the seminar will be archived at the Space Environments and Radiation Community of Practice site (<https://nen.nasa.gov/web/sr>) that is hosted by the Space Environments Technical Discipline Team. (Minow, 256-544-2850)

## 1) Human Space Flight and Exploration

### Upcoming Events:

SpaceX Demo-1 – 3/2/19

Soyuz 58S – 3/14

Progress 72P – 4/4

NG-11 – 4/17

SpaceX -17 - 4/25 (NET)

AA-2 – 4/27/19

- a. **On-orbit replacement of Fan Pump Separator brings space suit back in-service** - The EMU Team supported the removal and replacement of the Fan/Pump/Separator (FPS) on-orbit within Extravehicular Mobility Unit (EMU) 3006. After the hardware failure was identified on January 22, the team quickly developed a fault tree and recovery plan. With approval from the ISS Program, the crew was able to accomplish the removal and replacement of the FPS with a spare unit that was already on-orbit. Following the hardware replacement, the team ran the necessary Return to Service testing, including leak checks of the newly installed FPS. Forward work for the EMU Team includes a detailed data review with the larger community next week. EMU 3006 will be used as a back-up EMU for upcoming EVA's in March and April. The failed FPS will return on SpaceX Demo-1, and the EMU Team will perform Test, Teardown, and Evaluation (TT&E) to determine root cause of the failure.

- b. Orion EM-1 Sun Sensors complete functional testing - Aeroscience and Flight Mechanics** engineers recently performed functional testing of sensors used to determine Orion spacecraft's attitude for EM1 at KSC's Operations and Checkout building. Eight Sun Sensors and two Star Trackers were stimulated using variable LEDs and simulated star fields, with each sensor's output checked to confirm requirements were properly met. During testing, a possible configuration issue with one of the Optical Sky Simulators prevented full completion of the Star Tracker functional, but both Star Trackers performed as expected. All the Orion Sun Sensors performed within specifications ensuring full completion of the Sun Sensor functional.
- c. ESTA assembles Orion AA-2 “SuperBrick” battery: vibration testing successful** - The Orion Ascent Abort-2 Test (AA-2) SuperBrick SN002 has been successfully assembled and vibration tested by Propulsion and Power personnel at the Energy Systems Test Area (ESTA). The AA-2 SuperBrick is a battery that will be used in AA-2 as a power source for the Crew Module Separation Ring Power Distribution Unit. The SuperBrick fabrication effort included connector fabrication, insulation pad install, battery mounting, fuse and fuse hardware assembly, resistance temperature device (RTD) application, sense line tab welding, internal wiring connections, panel construction, and battery cycling for discharge capacity verification. After assembly completion, acceptance level vibration testing was performed at ESTA. The SuperBrick will undergo functional thermal testing in March 2019.
- d. Orion Crew Module Well Deck Recovery Conditions Dynamics Analysis** - The NESC provided ship response and wave dynamics expertise to the Exploration Ground Systems program and transitioned a Heading Advisory Tool to the NASA Landing and Recovery Team. Recovery ship response and wave dynamics expertise was requested in support of Orion Crew Module (CM) landing and recovery operations. Support requested included developing and verifying a Reduced Order Model (ROM) of the dynamic behavior of the U.S. Navy landing platform dock (LPD) vessel and performing dynamic analysis of ship well deck conditions for CM recovery. The assessment team developed a Heading Advisory Tool (HAT) that gathers wave measurements from radar or buoys and provides optimal recovery ship heading and speed to minimize transverse wave motion inside the well deck. The HAT was successfully tested during Underway Recovery Test (URT)-6 and baselined as part of the recovery process for URT-7. The HAT and user's documentation have been transitioned to the NASA Landing and Recovery Team. (VanZweiten, 321-867-6141)
- e. Launch Abort System (LAS) Development Status** - This week the Michoud Assembly Facility (MAF) team completed final AA-2 ogive modifications. On Tuesday the MAF team, working in the Operations and Checkout (O&C) at KSC completed the modifications to the LAS T0 area on the 180° ogive panel. Also, the team plans to ship

the 270° panel to the Launch Abort System Facility (LASF) on March 4. Last week the Attitude Control Motor (ACM) team in Elkton Maryland completed forward closure testing of the QM-1 motor. This week the team was working final motor assembly and expects to complete assembly next week. The Lockheed-Martin (LM) team at the O&C completed re-work of the AA-2 nosecone click-bonds. Nosecone integration is planned for completion before turning the LAS vertical late next week. This week the LASO and Flight Test Management Office (FTMO) team, with LM support was working AA-2 CM-LAS integrated avionics testing with plans to complete by late this week. The test suite includes four reference frame or "Phasing" tests as well as fail-over (aka solo-mode) and nominal count-down/count-up tests. On February 26, the LASO with the support of the entire AA-2 team, NASA and LM, successfully completed the AA-2 LAS System Acceptance Review (SAR). With only 3 months until the AA-2 launch the LASO technical leads described some of their top concerns. From Structures: The Vibro-Acoustic (VA) environment is a top concern and specifically for the fairing assembly. The team was unable to test to the predicted levels, and the reduced FoS (from 1.4 to 1.25 in some areas) has increased risk. However, the team feels OK to fly because the VA environment that was designed to is conservative. From the Chief Engineers Office: Interfaces are always a top concern including interfaces across the vehicle. There is also concern about the potential for latent defects within the ACM controller, defects that are discovered during flight and exposed by the harsh abort environment. Testing and inspections, including harness inspections by the chief engineers and Quality Assurance (QA), mitigate, to some extent these interface concerns. Controller concerns are mitigated, but of course not completely, by the thermal vacuum and vibration testing that have completed on the AA-2 unit and by the planned ACM QM-1 hot fire test.

Propulsion: Assuming a successful ACM QM-1 hot fire test the Propulsion team's top concerns include Valve Control System (VCS) performance issues that persist, issues not detected or manifested in the single hot fire test that will be complete before the AA-2 launch. The QM-1 test substantially mitigates concerns, but not completely, other testing such as forward closure testing, loaded valve testing and LAS-CSR (Crew Module and Separation Ring) integrated testing at the cape also serve to mitigate the concern.

The Lead Systems Engineer office: There is a risk that some components were over tested as a result of the very conservative loads environment. Any over testing would result in removing increased life from a box or component, placing the mission at added risk.

- f. **SPACE LAUNCH SYSTEM (SLS) CORE STAGE PRODUCTION SUPPORT (Leopard/Van Hooser/Lyles/Blevins/Adams):** The SLS Chief Engineer's Office investigated a suspicion that more design engineering support is required to support production and design

enhancements to speed production. A one-page summary of the red flags, indicators, and evidence that led to the suspicion was prepared and coordinated with the Stages Deputy Manager at the Michoud Assembly Facility prior to sending to Boeing Management. A meeting will be scheduled to discuss the concerns and determine what corrective action is required.

- g. **SPACE LAUNCH SYSTEM (SLS) EXPLORATION MISSION MOTOR SEGMENT PROCESSING (Leopard/Van Hooser/Lyles/Blevins/Wood/Bevill):** The Flight Support Booster-1 (FSB-1) center forward (C/F) segment lining is complete and flash thermography is in progress. The segment will be shipped to the mix/cast area the week of 2/25/19 in preparation for propellant cast on 3/4/19. The FSB-1 center aft (C/A) segment insulated level x-ray was completed with no defects detected. The Exploration Mission-2 center/aft (EM-2 C/A) left hand and right hand segments have completed processing in motor finishing and are ready for shipment to storage, pending storage deck availability and closure of open paper. A total of four EM-2 segments are now complete.
- h. **RS-25 Engine, NASA, Test Phase, SSC A1 Test Stand -** Test 901-1038 was conducted for a full duration of 510 seconds on 2/28/19. Engine 0525 will be removed and flight engine 2062 will then be installed for test on 4/4/19.

## 2) Science/NOAA

### Upcoming Launches

TBD ICON

3/12/19 - Daw: EUNIS Sounding Rocket @ White Sands Missile Range (Solar)

4/2019 (NET) - Space Environment Testbed (SET-1) Launch on Demonstration and Science Experiments (DSX) spacecraft

4/1/19 - McKenzie: CLASP-2 Sounding Rocket @ WSMR (Solar)

4/8/19 - Harris: SHIELDS Sounding Rocket @ WSMR (Solar)

- a. **Euclid:** Six Sensor Chip Electronics (SCE) modules have successfully completed the SCE flight acceptance test and four will now progress to the Sensor Chip Subsystem (SCS) Flight Acceptance testing. The other two will combined with two additional SCEs once they complete testing in a few weeks. Two more SCEs were delivered to the Detector Characterization Lab on February 26, 2019 and will commence the initial flight Acceptance testing. Four SCEs have completed the Flight Acceptance testing in the SCS configuration. The final reports have been sent to Jet Propulsion Laboratory (JPL). One of the four had a noisy channel and will likely be held back from delivery to European Space Agency (ESA). (Terence Doiron/550)
- b. **GEDI (Global Ecosystem Dynamics Investigation Lidar):** The GEDI Pointing Control System (PCS) team successfully completed the final phase of PCS checkout. This involved the primary Science Mode, called TRACK, whereby GEDI is pointed at targets selected by

the science team. The observed motion agrees extremely well with high fidelity simulation predictions. Additionally, the science team is reporting that the pointing accuracy was well within requirements with approximately 100% margin. Additional improvement will be achieved after calibrations are completed. (Michael Nemesure/591)

- c. **JWST** (James Webb Space Telescope) **Mission Systems Engineer**: The Spacecraft Element thermal-vacuum test Readiness Review was held February 26, 2019. (Mike Davis/599). Mechanical Systems personnel completed an analysis of the Deployment Tower Assembly to Isolator Assembly and Star Tracker Support Assembly (STSA) Integration and presented the results at a Mechanical Working Group meeting. No new shims at the STSA field joint are needed and no change to the internal DTA snubbers are needed. A recommendation to remove/replace the Spacecraft snubber bushing and re-center it is under consideration. Work continues on the Observatory Test Bed Vehicle Dynamics Simulator issue where there was an inability to consistently enter TRACK mode consistently during a Wave Front Rehearsal Test. The timing latency continues to be investigated and we remain at the point of understanding 2.5 of the 4.0 minor cycle latency. The Integrated Science Instrument Module team is reviewing results of troubleshooting tests (i.e. pattern test, Fine Steering Mirror step command test). Updated parameters also appear to have helped the latency by about 1 minor cycle. Mission Systems personnel supported the Contingency Battery Preliminary Design Review held a couple weeks ago. (Kathleen Jenkins/599). NASA received approval from the State Department for a license authorizing export of "technical data and limited defense services" to understand, mitigate and if necessary correct potential residual pressure issues associated with the Ariane 5 payload fairing for JWST launch. This was requested to allow JWST to work with Arianespace to ensure that the fairing pressure at the moment of fairing separation is low enough that any instantaneous release of this pressure will not overload the sunshield membranes, which may retain slight pressures from ascent. Having this license will allow JWST to share test data, review designs and analyses with the launch supplier, and if necessary provide expertise where needed to help solve the problem. (Jon Lawrence/543)
- d. **L-9/TIRS-2** (Thermal Infrared Sensor-2): TIRS-2 is in the Hot Operational testing phase of their first thermal vacuum test, and everything has been going well to date. (Carmel Conaty/592). Mechanical System: The TIRS-2 team continues to support instrument thermal vacuum testing. Preparations are well underway for the upcoming vibration and vibroacoustic instrument tests. The team will also be supporting a technical interface meeting at the spacecraft vendor's facility this week. (Danielle Vigneau/543, Sharon Cooper/540)
- e. **LISA** (Laser Interferometer Space Antenna): A Telescope Peer Review was held on 2/20/19 where the telescope envelope and mechanical interface was presented. This

review was geared to the development of the procurement specification. The review was supported by ESA colleagues. The Goddard optomechanical team is awaiting feedback. (Michael Hersh/544, Corina Koca/544)

- f. **Lucy/L'Ralph:** Javier Del Hoyo/551 successfully deposited a near-ultraviolet enhanced protected silver coating. The theoretical spectral reflectance showed excellent agreement to the experimentally measured reflectance. He also worked on the statement of work for the L'Ralph dichroic beam splitter. (Javier Del Hoyo/551). SE Management: The Lucy team welcomes Colby Goodloe as the project spacecraft systems engineer. All project systems staffing is now in place for Phase C. Provided project systems recommendations to the Lockheed Martin team for proceeding with the Moli M battery as well as specific items for consideration. Mission Preliminary Design Review Request for Actions are progressing on schedule. GOLD rule waivers are in various stages but are being worked. (Jessica Thompson/599, Kathleen Jenkins/599)
- g. **PACE (Pre Aerosol Clouds and ocean Ecosystem):** The mechanisms team is currently analyzing; testing; and compiling information on previous tests to characterize many aspects of the design. Additionally, the Ocean Color Instrument - tilt mechanism interface changes have been finalized allowing the team to proceed with a combined system stiffness analyses; further develop the design of the Tilt System structure; and the fabrication of Ground Support Equipment hardware to simulate assembly configurations. Work on the mechanism Engineering Model boards is continuing while Flight parts are in procurement. (Chuck Monroe/544, Corina Koca/544)
- h. **WFIRST (Wide-Field Infrared Survey Telescope):** Payload Systems Engineering continues to support Mission in Phase B planning and execution of Phase B trades, liens, documentation, Integration & Test planning and interface development. Coordinating with Mission Systems Engineer on development of Mission-level Technical Baseline Configuration tracker to support baseline freeze for Mission Preliminary Design Review by end of March 2019. Dark Mirror samples have been prepared and being packaged to send to Harris for testing. Optical Verification Peer Review planning is underway, dates are tentatively during June 2019. (Jody Davis/592, Alice Liu/592, Carmel Conaty/592)
- i. **Mars Entry, Descent, & Landing Instrument (MEDLI2) Development Progress -** The LaRC-led MEDLI-2 project provides heat-shield sensors to acquire atmospheric entry data on the Mars 2020 mission. Repairs to the flight spare Sensor Support Electronics (SSE) due to a blown fuse issue have been completed. Repeat of the final testing of the flight spare SSE is progressing well and should be completed this week. Dry Heat Microbial Reduction (DHMR) of the second Backshell Pressure Transducer is underway and should be complete next week. Final calibration of the heat flux sensors and radiometers was completed. Two of the heat flux sensors are providing anomalous readings. A Material Review Board concluded that they should not be designated as

flight nor flight spares. Because this would result in no flight spare heat flux sensors, the project is developing the plan to perform environmental testing on a few other heat flux sensors to ensure sufficient flight spares are available. Work is progressing on backup plans in case the existing Crane DC-DC converters cannot be replaced as currently planned.

- j. **Europa Clipper:** The Planetary Protection (PP) Plan and PP workshop Memorandum of Understanding (MOU) are in signature at headquarters; that plan, based on the Probabilistic Risk Analysis-demonstrated and community-vetted insensitivity to initial bioburden, would provide significant relief on needed cleanroom level and the amount of hardware for which Dry Heat Microbial Reduction (DHMR) is required.

UVS (Ultraviolet Spectrograph) iCDR (Instrument CDR) is scheduled for 03/12-14/19 at SwRI.

SUDA (SUrface Dust Mass Analyzer) iCDR is scheduled for 03/20-22/19 at CU/LASP.

The SLS (Space Launch System) Europa Phase 1 Safety Review has been rescheduled for 3/26-27/19 at MSFC. Project ΔPDR is scheduled for the 06/18-20/19 at JPL.

**ICEMAG (Interior Characterization of Europa Using Magnetometry)**  
Instrument: ICEMAG held an FPGA peer review that went well. ICEMAG CDR is scheduled 7/29-30/19.

MISE (Mapping Imaging Spectrometer for Europa) Instrument: MISE CDR scheduled 5/21-23/19.

- k. **REASON (Radar for Europa Assessment and Sounding: Ocean to Near-surface)** Instrument: On 02/28/19 a Technical Interchange Meeting was held with Airbus, Flight System (APL and JPL), Integrated Product Team and REASON to review requirement modifications to be put on contract following the Integrated Wing Review and Solar Array ΔPDR held at the end of January. There was a data review for the MCJ205A20V05V flexible coax cable's qualification campaign on Feb. 22. The only open issue is understanding the source of some discoloring on one of the connectors. The next step for the coax cables is ESD testing. At the Solar Array delta-PDR/Integrated Wing Review, the Airbus team presented a Titanium additive layer manufacturing (ALM) interface bracket to hold the REASON antennas. REASON Electronics CDR is scheduled for 4/24-25/19 but is likely to slip into May. REASON Antennas CDR scheduled 11/13/19.

**I. MAIA (Multi-Angle Imager for Aerosols):** MAIA can report that we held a successful Calibration CDR. There were no significant findings. MAIA can report that we selected our preferred 3 flight units from 9 articles tested. Two additional units are being saved as a contingency. The 3 selected units meet MAIA's key requirements. 2 or 3 of the other units will be used for qualification testing starting with Total Ionizing Dose (TID) testing starting tomorrow. MAIA will have a Harness Detailed Design Review on the 28<sup>th</sup>, A detailed design review for the biaxial gimbal on the 6<sup>th</sup> and 7<sup>th</sup>, an I&T and V&V review on the 8<sup>th</sup>, a peer review of the SDS (Science Data System) on the 8<sup>th</sup>, The Host SRR at General Atomics on the 12<sup>th</sup> and 13<sup>th</sup> as part of the lead up to the project CDR still nominally scheduled for April 25<sup>th</sup>.

**m. Mars 2020:**

**Next Major Milestones:**

March 7 C4.0.1 (cruise software build delivery to ATLO) SRCR #2.

April 15 CEDL V&V Completion Workshop.

June 5 S5.1 (surface software delivery to ATLO) SRCR.

August 1 S5.2 SRCR, C4.1 SRCR, SECC (Second Chance EDL) 4.1 SRCR.

August 1 System Test #3 (Launch-EDL, SOX, Surface).

September STT (System Thermal Test), Rover.

November System Test #5 (L-EDL, SOX, Surface).

December 15 Pre-Ship Review for Cruise Stage, Descent Stage.

**HRCRs:**

Sacrificial Cables (Non-fight Surrogate cabling for pyro testing) HRCR was completed on 2/21

Rover Internal Flex HRCR was completed on 2/27

**ATLO:**

MMRTG Trail Blazer activity at CCAFS/KSC was completed successfully.

Thermocouples, accelerometers and thermal blanketing installation continued on the Cruise and Descent stages in advance of the stacking of these stages for the Launch/Cruise environmental testing in April.

**V&V:** On the Mission System Test Bed, testing included Fault Protection, Comm Behavior Basic Functional, EDL Actuators, VCE PFR Debug, EDL Timeline, Rover Shunt Current Telemetry Monitor Investigation and FSW Dev. On FSW Test Bed, testing included RSM Relay Box checkout with an A500 motor, Mobility, Robotic Arm, Supercam, Helicopter base station EIP, Motor Control Rest Recovery, MEDA Surface Checkouts and DPFR retest for Supercam and RIMFAX. The RMCA MCFSR cards were removed on Monday to have rework performed. On AVS Test Bed, SHERLOC integration completion, SHERLOC Nominal Checkout, Avionics, Surface ACM Matrix testing and Fault Protection PFR Investigation.

- n. **JWST MIRI (The Mid-Infrared Instrument) of JWST:** NGAS and MIRI I&T Teams continued preparations for the Spacecraft Element (SCE) TVAC testing slated for late March 2019. The MIRI Focal Plane System (FPS) test lab (@JPL B79) is preparing for the next characterization test run for April-June. JPL/MIRI, STScI (Space Telescope Science Institute) and GSFC personnel continue the development of the MIRI Cooler's JT (Joule-Thomson) compressor assisted anneal process as a baseline strategy change due to the much higher frequency of anneals expected during flight operations and the necessity to make the process an on-board script as opposed to real time commanding. The MIRI Operations Concept Document has been distributed for review by MIRI JPL, MIRI European Consortium and Space Telescope Science Institute (STScI) engineers and scientists. This MIRI Operations Concept Document will be used in the generation of the JWST Mission Operation Concept Document. Milestones: TVAC start (chamber door closure now scheduled for March 29, 2019).
- o. **NISAR (NASR-ISRO SAR Mission):** A System Integration & Test (SIT)1/SIT2 Integration and Test Readiness Review was held with a board of JPL subject matter experts and Standing Review Board members. Staffing and late deliveries were identified as risks. Good progress continued on L-SAR flight assemblies. The first fully assembled L-band Transmit/ Receive Module (TRM) and the first Quad First Stage Processor (QFSP) completed random vibration tests with no issues. The RF Back-End started a four week thermal performance test on both H and V channels. The Boom upper and lower mast assemblies completed thermal conditioning at Northrup-Grumman Innovation Systems (NGIS). These composite structures are the fully bonded flight units and are now in post-thermal cycle inspection. The masts will next be static proof tested beginning late next week. A test readiness review was completed for the static and thermo-elastic testing. The boom is on schedule for a June delivery to JPL. The first set of flight harnesses was delivered to JPL. Harness deliveries will continue into April in support of early SIT1 integration activities. Heaters, thermostats, and thermal sensor installations were completed on the Radar Instrument Structure panels. Panels are now ready for harness installations. NISAR Science supported an Indian Space Research Organisation (ISRO)-NASA meeting for a possible ISRO L-band/S-band airborne Synthetic Aperture Radar (SAR) campaign in the US. Topics included the site, observation strategy, NASA aircraft-ISRO instrument integration timeline, roles and responsibilities. The campaign will generate a unique L and S-band data set for science investigations and NISAR-related joint algorithm development. A follow-up meeting, planned for March 25-29 at JPL & Armstrong, may be delayed if ISRO personnel cannot get US visas in time.

**Upcoming Major Activities and Events:**

Date	Project	Meeting or Event	Location
02/28/19	NISAR	Pre-CDR Verification & Validation (V&V) Review Follow-Up Meeting	JPL

## OCE Weekly

3/1/2019

Date	Project	Meeting or Event	Location
04/10-12/19	NISAR	Focused Technical Meeting (FTM). Topics: BDH ICD Finalization & OBC-PDS Interface Test	ISRO/URSC (Bangalore)

- p. **OCO-3 (Orbiting Carbon Observatory 3):** OCO-3 successfully completed the KDP-E this week at Headquarters. The project is approved to move forward with final launch processing activities and In Orbit Checkout (IOC). Transition to Phase E will take place after the Post-Launch Assessment Review (PLAR), which is scheduled to take place at the end of IOC. OCO-3 to Dragon integration activities have been officially scheduled with SpaceX. Logistics are expected to be finalized with SpaceX and KSC via telecon on Feb 28th. OCO-3 will be moved from the Space Station Processing Facility (SSPF) to Dragonland on March 18th. OCO-3 integration with the Dragon trunk is expected to complete on March 20th.

Upcoming milestones:

Dragon integration activities start: March 18<sup>th</sup>.  
Launch: N.E.T. April 25<sup>th</sup>.

- q. **Psyche:** Held a tabletop review with key members of the Cold Gas PDR review board to address issues identified at the Cold Gas propulsion PDR (recall that it was a partial pass). That review concluded with unanimous acceptance of the revised Cold Gas Subsystem design. The revised system meets all project requirements and is the baseline for our upcoming flight system/project PDR. Successfully completed the second part of the pre-PDR V&V review. Successfully completed the Mission design and Navigation pre-PDR peer review. Successfully complete the Deep Space Optical Communication (DSOC) Accommodation Kit (DAK) PDR. The primary concerns raised by the review board in that review were related to schedule pressure. Next project major review milestone: Flight System and Project PDR 3/11-3/14.
- r. **RIME (Radar for Icy Moons Exploration):** RIME Transmitter and Matching Network are undergoing project replanning activities to accommodate in house work. RF will be developed in house, Power Supply will be developed under contract. For receiver, due to parts issue, looking at removing front-end switch. Performing tests to verify if switch is required to meet instrument performance requirements.

Project milestones:

2019-03-29 – delivery of engineering model to Italy.  
2019-04-01 – new Transmitter interface review.  
2019-06-28- Flight receiver delivery.  
TBD – Transmitter / Matching Network delivery.

- s. **SWOT (Surface Water & Ocean Topography):** The KaRIn antenna deployment mechanisms completed Non-Op thermal testing. The KaRIn Digital Electrons Subsystem (KDES) Thermal Control Subsystem (TCS) completed ambient thermal testing. The Extended Interaction Klystron (EIK) started TVAC testing this week. The KDES is completing its thermal-ambient testing this week. Successful HRCRs were held for the Nadir Module primary structure and KaRIn harness. Next major milestone: Payload SIR 2/5/2020 (Lead into PL I&T at JPL); LRR is 9/24/2021.
- t. **WFIRST/CGI (Coronagraph Instrument):** Held a detailed design review of the deformable mirror (DM) driver electronics ASIC backup design with Silicon Artists. All actions from previous design reviews were addressed. Coronagraph testing: (1) continued starlight suppression experiments with shaped pupil masks and the Prototype Imaging Spectrograph for Coronagraphic Exoplanet Studies (PISCES) prototype spectrograph. Opened vacuum chamber to fix focus error in the spectrograph optical path, (2) making new Hybrid Lyot masks for Phase B telescope pupil in JPL's Micro Devices Laboratory (MDL), (3) refining a test plan for verifying, with the (Hybrid Lyot Coronagraph (HLC) mask, the number of iterations need to get to the required contrast level. Held a Table Top Peer Review for CGI Focus Control and Fast Steering Mirror Mechanisms. Good feedback from the board on design details. Concerns were raised on several known issues (lack of life testing, need to test mechanism with electronics prior to delivery). Will host a follow-up discussion on Level 6 requirements and V&V plans. Laboratoire d'Astrophysique de Marseille (LAM) has appointed an experienced project manager and a quality assurance engineer for their contribution of off-axis parabolas (OAPs) to CGI, started to polish prototype OAP #7. CGI Mission Assurance Manager plans to visit LAM in April to meet with their QA and discuss their quality plans. WFIRST CGI is working toward the instrument PDR planned for August 27-29, 2019.

### 3) Aeronautics

- a. **Unmanned Aircraft Systems (UAS) Integration in the National Airspace Systems (NAS) Flight Test 6 (FT6) Critical Design Review** - The critical design review for the NASA UAS Integration in the NAS Project FT6 was conducted at AFRC on February 21. FT6 is the final flight test event in the UAS in the NAS project and will investigate technologies related to Low Size, Weight, Power and Cost (Low C-SWAP) UAS operations. The flight test objectives include characterizing the performance of a Low C-SWAP radar, validating the Low C-SWAP Detect and Avoid (DAA) Well-Clear and Alerting definition, and evaluating total human-system performance through a full mission simulation of UAS operations in the NAS with subject pilots controlling the UAS. FT6 will utilize a Low C-SWAP airborne surveillance RADAR developed by Honeywell mounted on a Navmar Applied Sciences Corporation (NASC) Tigershark aircraft flying DAA encounters with live

aircraft. The results of FT6 will inform the RTCA Special Committee 228 Minimum Operational Performance Standards (MOPS) for Low C-SWAP UAS DAA systems. LaRC provides the FT6 Principal Investigator for the Detect and Avoid team and also developed the Detect and Avoid algorithm (DAIDALUS) that will be used in the test.

#### **4) Technology**

- a. Z-2.5 Space suit begins Neutral Buoyancy Lab test series** - The Exploration Extravehicular Mobility Unit (xEMU) Pressure Garment System (PGS) Team, in collaboration with the Neutral Buoyancy Lab (NBL), successfully conducted the first crewed run of the Z-2.5 space suit in the NBL. The xEMU Project is tasked to build a demonstration unit of the xEMU space suit to test on the International Space Station (ISS) by 2023. This suit will be called xEMU Demonstration Suit, also known as the xEMU Demo. The Z-2.5 space suit is a prototype of the xEMU Demo. The NBL test series will focus on evaluating the microgravity performance of the Z-2.5 suit and its ability to complete ISS-related tasks. The test series will continue with evaluations from three additional crew members to help characterize the microgravity performance of the Z-2.5 space suit.
- b. Robonaut passes Electromagnetic Interference testing** - Avionic Systems Division (ASD) personnel completed a 5-day series of Electromagnetic Interference (EMI) certification tests in the Building 14 semi-anechoic chamber on February 25. This testing is in support of Robonaut reflight efforts. All data was found to be in family with previous certification efforts. Additionally, the EMI team evaluated methods to provide additional electromagnetic shielding over the torso of the Robonaut in order to reduce electromagnetic emissions. Ultimately, the use of a soft conductive cloth proved the most effective. Plans to return Robonaut to ISS are currently in-work.